

AVIATION WEEK

A McGRAW-HILL PUBLICATION

APR. 25, 1949



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XLD

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Lands Like a Feather

with **Electrol** Landing Gear Oeos



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Manufactured to Electrol's rigid standards of scientific accuracy, these specially designed Landing Gear Oeos fully meet the exacting requirements of helicopter operations. They are light in weight, easy to install, service and maintain.

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AVIATION CALENDAR

Apr. 8-11—Air Show, at Airport Strength exhibition, Cincinnati, Ohio.

Apr. 10-12—Annual meeting, American Geodetic Survey Association, Hotel Del Rio, Austin, Tex.

Apr. 11-12—T-33, annual aircraft meeting, Hotel White Sulphur Springs, W. Va.

Apr. 15-May 1—Fleet annual maintenance and inspection, Circle Park, Phoenix, Ariz.

May 1-4—Annual official meeting of the American Pilots Council, Denver.

May 1-4—Annual meeting, International Institute of American Architects, Washington, D. C.

May 4-6—Annual Conference on aircraft maintenance, sponsored by Board of Aircraft Parts, Purdue University, Lafayette, Ind.

May 4-6—Pittsburgh University, School of aeronautics, air transportation conference, Pittsburgh, Pa.

May 4-6—Annual Southern States air show, Atlanta, Ga.

May 4-6—Annual meeting, Aerospace Industries Association, Hotel New York, New York, N. Y.

May 17—ATA aircraft maintenance conference, sponsored by the Protection Association of Airlines and Aircraft, Protection Hotel, San Francisco, Calif.

May 18-20—At the Experimental Aircraft Association, annual meeting, Hotel Statler, Cleveland, Ohio.

May 20—Hawker-Siddeley acquisition, Farnborough, England, airshow, Farnborough.

May 23-26—Eighty-ninth congressional meeting, National Association of the U. S. Civil Service, Washington, D. C.

May 24-26—Annual meeting, Virgin Airlines Corporation, Sheraton Hotel, Washington, D. C.

May 24-27—Annual meeting, Society of the Friends Industry, Biltmore Hotel, Atlanta, Ga.

May 24-27—Annual convention, Western National Association, Hotel of the U. S., Chicago, Ill.

May 25-27—Annual meeting, Virgin Airlines Corporation, Sheraton Hotel, Washington, D. C.

May 26-June 4—ATA annual conference, Statler Hotel, Wash., D. C.

June 2-4—Midwinter Conference, AFCEA, Hotel Statler, New York, N. Y.

June 2-10—Annual meeting, National Business Aviation Association, Atlanta, Ga.

June 2-10—B-57 Women, All Women's Airshow, Willow Field, Willow, Pa.

June 4-10—Annual meeting, Airline and Industrial Pilots Association, Atlanta, Ga.

June 4-10—CAF annual meeting, McDonnell Douglas and Manufacturing Area, Hotel Statler, The Grand, Cincinnati, Ohio.

June 15-18—Annual meeting, American Flying, Boeing Cross City University, Seattle, Wash.

June 18-24—ATA summer general meeting, New York Hotel, New York, N. Y.

June 18-24—NAA 10th annual national meeting, Hotel Statler, New York, N. Y.

June 19-20—Annual conference, Naval Ordnance Laboratory, annual meeting, N. O. L. meeting, Hotel Statler, New York, N. Y.

June 24-26—National meeting, Detroit, Mich.

July 1-4—Annual meeting, Hotel Statler, New York, N. Y.

July 2-4—Annual meeting, Hotel Statler, New York, N. Y.

PICTURE CREDITS

15—Wide World 17—American Airlines

AVIATION WEEK, April 25, 1949

INDUSTRY OBSERVER

• Air Force generals testifying on Capitol Hill dropped a hint recently that Convair would get another order for 14 additional B-36D composite-precision intercontinental bombers. With the 170 now on order this would bring USAF B-36 strength up to an eventual 181. This is not enough to equip two heavy bomber groups and two strategic reconnaissance groups without quotes or figures for normal attrition. According to present USAF plans the B-36 program will keep Convair's Ft. Worth plant going full blast for another two years at least.

• Convair will modify the 23 B-36As already delivered to the Eighth Air Force as photo-interception model 18A for strategic reconnaissance. The B-36As will be equipped with permanent map reading cameras, installations and will carry four Convair Electron 40 jet engines in addition to the Pratt & Whitney Wasp Major power engines.

• USAF requirement for a strategic reconnaissance plane has been liberal around than any other category during postwar years. First competition was between Howard Hughes' XF-11 and Republic's XR-12 with the nod going to the Republic plane. Production contract for 20 R-12s was in the mill when the Bessie Meigs-Hughes-Burton investigation hit the home page and put the R-12 contract in the Wright Field "pending" file. Until then the Northern Jet Flying Wing was asked to fill the gap and letters of intent for 30 RB-46s were given in March. That was washed out when it became evident that the XB-49 would require considerable redesign before it could go into production. Finally model R-36s were finally picked.

• North American will modify 14 B-45As into the RB-45 to meet USAF requirement for night photo planes to replace current Douglas RB-26s. USAF now has a option of 30 RB-45s for reconnaissance planes but still plans to convert some North American F-86s into a photo version. Boeing will swap two groups of RB-50s for strategic reconnaissance. These groups will be segregated by 24 converted B-29 bombers for aerial refueling of the photo planes.

• Sabre jets in USAF long range procurement plane or the Douglas C-124A and the Lockheed T-38. The C-124A now figures as the standard replacement for the C-54 transport and standard component in heavy haul carrier operations. Both USAF and Navy will buy some TF-51s out of stored 1940 funds with USAF figuring on a large increase in subsequent years when pilot training rates sharply to fill out the TF-51 Group program.

• Despite an order to Northrop for 48 F-89 twin jet night fighters, USAF is still shopping around for a suitable night fighter. The Lockheed F-94, (118 on order) a single fighter version of the TF-80C, is favored for service with National Guard fighter squadrons as a replacement for the North American T-28 Matador (182), which will be bowed down from regular units as soon as F-89s are available. USAF has bowed night fighter requirements from three to 11 squadrons, needing an estimated 300 planes. Rebin of night fighters to day fighters is expected to increase when a top-notch night fighter is developed to justify more than service test quantity orders.

• USAF officials told Congressmen that the next fighter to get a sizable production order will be either the McDonnell XF-85, Lockheed XF-90 or the North American F-93. Contract for the F-93 production has already been awarded although North American has two experimental prototypes and expects to have the first flying this summer. The McDonnell XF-85 has now flown at MacDill and will probably move on to the longer-range jet fighters now in the air. Since USAF's most pressing problem is for a high altitude interceptor, Lockheed's XF-90 will probably get the order.

• In its hand-to-hand production version, the Boeing B-47 will be USAF replacement for the B-50 medium bomber. Boeing's turboprop-powered giant the XB-32, will figures as the B-36 replacement in current USAF planes. B-32 is scheduled to get into production as about five years

NEWS DIGEST

DOMESTIC

Kaiser Aerospace Corp. has received a general Type Certificate for its K-190 industrial helicopter (AVIATION WEEK, Aug. 2, 1948).

Colonial Airlines last week completed 19 years of operation without a liability to crew or passengers. The only U. S. certificate carried to receive such a mark, Colonial flight 250,517,622, passenger miles since April, 1930.

The American Airlines started Standard service to Beaufort from New York International Airport (Tidwell). Two flights a week each way will be made with the big Boeing transports. Service of the line departs with the Port of New York Authority, passengers are cleared through the Airline Terminal at New York City and go by bus direct to the plane.

Prudential aircraft exports for March by ten companies reported to Aircraft Industries Association 45 planes valued at \$102,924. France and the United Kingdom taking 18 planes worth at \$15,497. For the three months of year, exports totalled 215 planes valued at \$187,462.

Lt. Gen. C. W. Whitehead took command of the Continental Air Force, with headquarters at MacDill Field, Fla., succeeded Lt. Gen. George C. Stratemeyer.

Lockheed Corporation, Navy transport, next month will begin a 10,000-mile New England tour, visiting 15 major U. S. cities. Representatives of the Bureau of Personnel will travel on the plane.

FINANCIAL

Job & Hunt's Precision Industries reports net loss of \$2,663,623 for the year ended Dec. 31, 1948, on sales of \$12,758,822. Preceding year, sales were \$21,519,126, and company showed profit of \$174,627. While sales of financial instruments problem dropped, net tax rates are going up as volume

FOREIGN

British Audit lot was high on the stage when U. S. and British firms flew in total of 12,340 tons in 24 hours per day during racing from April 16. With 95 percent of available aircraft in operation, 1,394 planes landed at the three British airfields. About 12 percent of all flights were made by U. S. planes.

British Royal Astronomical Society has elected Sir John S. Baraman president for 1949-50. With a long career in aircraft development and manufacture, he has also recently been technical director of Short Bros. and Harland, Ltd.

pointing out that individual owners have violated the regulations, CAB took notice of illegal packing arrangements which have been made most frequently through air mail as travel agents. These agents represent a number of large regular carriers and advertise that they will ticket between designated points.

Even though the operations of a particular irregular carrier are monitored by the agent, the irregular and infrequent practices of packing and arrangement of such flights by a sufficient number of nonregular carriers is a frequent and significant service by the group. Thus, when a prospective passenger asks the travel agent for recommendations, he can be advised that space which is available on any flight desired.

CAB said "It is difficult to imagine no management which would not fully realize the purpose of the nonstandard exception." Consequently, the Board has issued far public comment proposed regulations which would prohibit carriers from flying with CAB agreements with other agencies or brokers and to file copies of all documents at least six months in advance.

The proposed rule would prohibit the making of agreements involving in the conduct of regular operations through combination of various CAB-Subsidiaries. Affected Transoceanic continental nonregulated carriers were preparing to review some of their prior to CAB's deadline. Some say go ahead with their plans, operating wide open as long as possible on the theory that post-valuation will present their greatest opportunity for expansion.

Meanwhile, CAB has decided to operate more difficult and expensive for large enough and contract carriers by furnishing applicable safety regulations effective June 1. Anticipating that some nonregulated will now that to allegedly outlast operations, the Board has asked Comptroller for authority to extend CAB's economic jurisdiction to this type carriers.

Since 2000 small irregular carriers using light aircraft primarily are continuing to apply for authority to CAB's latest actions. The smaller carriers for small amounts is continuing, but these operators are also prohibited from entering into any agreements to conduct continued operations with other carriers so as to allow subsequent regulation against frequency and regularity of service.

Canadair Tooling for F-86 to Start Soon

Tooling for first production order of 100 Canadair-built F-86 jet fighters under contract with North American Aviation will start soon at Canadair Ltd.'s Montreal plant. The service arrangement has been cleared by U.S.

Record Payload

Conair's XC-99, giant one-engine transport counterpart of the B-52 bomber, set an unofficial record payload record recently by lifting a 100,000 lb. payload off Canadair AFB, P.E.I. **Ward**

Flight was part of Conair's flight test program preliminary to USAF acceptance of the plane. It was not officially announced by Northrop's Aerospace Avionics which be involved.

The fastback Marauder Class 2 reported that the prompt reaction of RCAF in loss of the F-56 was as follows: "The Vampire Mark III is 'almost at the end of the obsolescent road.' The Canair cited the difference between Canadair's and Great Britain's jet fighter tactical requirements and added: 'It was not made clear however why Canadair packed British jets which emphasize qualities desirable as fighters by Britain, rather than Canada, in the first place.'

Transoceanic's Marauder class 2 went to the XC-99 130,000 lb performance was 94,000 lb to bomb and 92,000 lb to maximum weight. Canadair's XC-99 was capable of bombing 29 other world aircraft records in addition to the payload mark.

Military authorities and first planes are expected to come off the Missouri assembly line in Wichita, 1958. Additional orders are expected to follow the first 100 planes.

Canadian sources reported that North American had signed to supply 30 American-built F-86s to Canada at a cost of approximately \$15 million. An authoritative American source said that negotiations for North American to build F-86s for Canada had not yet been approved by National Military Board.

► **Lease Deal**—Lease option was arranged between North American and the Canadian government which then assigned the manufacturing contract to the Montreal company. Agreement included rights to make modifications to the original design. It is understood that principal modifications will be in armament, and in a possible powerplant substitution.

Tacoma plant of A. V. Roe is currently making a new jet engine, designated the Ontario, which may be used in place of the Canadian Electric J47 (TG-170) and new engine order of 5000 units. It is also a trademark in the production American-built F-86. The Ontario was originally developed for the Canadian-built XC-130 twin jet fighter

Canadair military authorities indicated that it was inadvisable to combine as stated powerplant with an armament aircraft, so that another engine may now be used in the XC-130.

Canadair's principal jet fighter now is service in the British de Havilland Vampire Mark III of which 77 are in service in Canada. Proposals to replace these with the F-56 has aroused considerable concern in Canada among Royal British Air Force which has argued that a later Mark VII Vampire should be considered, instead of the F-56.

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the most powerful of four Boeing Stratojetson by British Overseas Airways Corp. from Sweden and the reported plan of BOAC to spend \$15 million to buy 10 more days later from Boeing. Swedish concern calls for payment in pound sterling.

Stating that some U.S. airlines can't afford BOAC's, Marauder informed the CAB, noting further: "We are extremely grateful to the British. We know that even if BOAC doesn't actually pay for the planes, BOAC agency makes it possible for the British government to divert their own funds for that purpose." O'Connell conceded that though ECA, the U.S. could be in the position of indirectly financing the development of foreign aircraft.

Actually, ECA contributed upwards of \$40 million in direct or in foreign aid, as well as making some of Western Europe's own dollars available for aviation purchases. These dollars generally go all to the U.S. aircraft manufacturers and not to ECA.

► **Hartman's Report**—Hartman's reply to O'Connell doesn't attempt to get top off, but outlines ECA's duties and responsibilities, namely European security. This means increasing the Marshall Plan countries' ability to carry foreign exchange through both visible and invisible exports (in this case air travel

fuels). At the same time ECA is at long last to cut Western Europe's dependence on dollar products.

The Hartman letter tells O'Connell that ECA bases its judgment mainly

on the existence of a request—if it will be recovered, how much, if resulting government would have any serious jet part an immediate ECA reply to O'Connell doesn't even mention Italy.

Cannon States Case for USAF

Based on present budget for military air power clearly its second major line is by a spending 25% to 3% in the House.

The House vote supported recent resolutions of the House Appropriations Committee (Aviation Week, Apr. 15) to provide \$2.7 billion for procurement of 3393 new military planes with an average weight of 49,940,000 lb. Of this total the Air Force gets 2550 planes (41.8 million airframe lb) and \$2.217 million in new procurement funds. Navy will get 941 planes and \$467 million in procurement funds. Navy air force flight activities has been increased from \$1.9 million to \$7 million.

► **Sound Step**—Hartman's reply to O'Connell doesn't attempt to get top off, but outlines ECA's duties and responsibilities, namely European security. This means increasing the Marshall Plan countries' ability to carry foreign exchange through both visible and invisible exports (in this case air travel

fuels) that this, truncated last year, in this program they who made it clear that the Air Force is now considered the first line of American defense and will put the last of their share of defense air power funds.

► **Navy Defeat**—Navy's bid for a \$143 million increase in aircraft procurement funds was lost by a vote of 125 to 6. Lack of support for Naval Aviation was based on the expressed thought that the Navy could have the adequate Naval Air Force out of the \$5 billion voted the Navy, and that it was up to the Navy to use its funds to get the planes it wanted.

Navy lost an additional \$21 planes by the amendment's defeat. The additional planes would have been 157 jet fighters, 230 attack, planes 25 patrol bombers, and 39 jet fighters.

► **House Southeast**—Support of the majority vote backing the Air Force was repudiated by Rep. Chester Cross



NEW FLYING BOAT ROLLED OUT

First plane of Convair's initial XP7Y-1 long-haul aircraft is on flat specialty trailer installed at Lindbergh Field, San Diego, waiting installation of first Allison T-53 turboprop engines. Design features a high long-wing monoplane hull which reduces flight drag while

fuel installation will delay first takeoff from San Diego Bay, adjacent to field, until the other side of base. Huge 424 ton lift for 390 mph top speed, fastest big craft in history. It has 146 ft open, 138 ft length and stands 45 ft high. Convair

portion always abstracted passage up-and-down the length of the cabin, has been moved forward to the nose of the Shuklent. In addition to clearing the cabin, this change allows the radio operator to shift easily to the radio-arming position in the extreme nose of the plane, and set an forward gunner.

Forward guns have been increased from 30 caliber to twin 20-mm case and cartridge. Improved rate of fire now exceeds 1,000 rounds per minute, and gun mountings permit greater downward-turret movement. That is an important improvement in the plane's ability to defend itself against a nuclear missile's guns.

Other armament will mainly remain the same on the Luscombe, a dorsal boom (Bristol Type B-17) mounting two 20-mm Hispano ML-4 or ML-5 canons, and a tailboom (Bristol Type B) electro-mechanically-operated, with radio ignition.

Another identifying difference of the Shuklent is the reduced engine classifier project just aft the leading edge of the wing, which is unlike the Luscombe and Lufthansa.

Speed of the Shuklent probably won't exceed the Luscombe, which does 155 mph maximum, 215 mph long-stage cruising.

Boeing Production Unaffected by Quake

The Pacific Northwest's worst earthquake had virtually no effect on production at the Boeing Airplane Co. plant in Seattle, Wash., we find. It caused very appreciable damage to the plant.

The quake came during a lunch period. The 15,000 persons employed in the dry dock immediately evacuated work shops and restaurants but there was no panic. Approximately \$100,000 in damage was caused by partially completed planes in the Seattle and Renton plants and an Boeing field, across the street from the Seattle plant, escaped damage.

Jackie under one plane in the service center was reported to have "walked" several inches.

Stainless windows were smashed in various Boeing buildings and two windows between the engineering and administration buildings had to be closed when steel plates sheared off. One man was injured slightly by a falling light globe and another employee suffered a slight heart attack.

Boeing production area may possibly have been thrown out of adjustment but had not yet been checked at the end of the week.

Boring employment now exceeds 25,000, although cancellation of the B-52 bomber project is reported to affect approximately 10,000 workers. Since this is less than the normal assembly voluntary termination figure, any workers laid off are expected to be absorbed on other projects.

No Cause Found

Federal investigation has been able to determine the cause of the Boeing Airplane Co. DC-4 accident which took place at Tangier Mountain, Anacortes, Alaska, on Oct. 16, 1947.

Bound from Seattle to Juneau, Alaska, the plane failed to make an intermediate stop at Annette Island because of extreme turbulence. It landed at Juneau and at Tangier Mountain, 196 ft below its 1600 ft summit. The 13 passengers and crew of five were killed.

Investigation showed the plane was far off course when it struck the peak. There was no evidence of structural or mechanical failure. CAB specified that the accident might have been caused by the pilot's failure to maintain which resulted in loss of control. The report stated also that the PAA weather forecast failed to include information on the severe turbulence around Annette Island.

"AILE MABEL" BOOSTS GROSS

The Morris Mable (AM-1) shown above carrying a record payload for a single-engine aircraft. The Mable took off from the weight of 26,312 lb, including 16,650 lb. of equipment (three refrigerators and twelve 250 lb. bags of flour, coffee and macaroni) while lower Mable weighed 27,000 lb. and carried a 3,000 lb. load from Tivoli Tug

and two 12-foot-wide masts. Below right: Morris Test Pilot O. E. "Tiv" Tidwell stands next the F-82G he started last (continued on page 10)

Ward's \$25,000

Retirement pay plan of Fairchild E. & A. head hit by company founder.

Long standing dissatisfaction with the management of the company he founded led Sherman Fairchild last year to end his contract with the corporation's radio and television equipment division. Fairchild was chairman of the board and a partner Ward's original contract which provided for base pay of \$35,000 per year, plus 4 percent of earnings above a certain figure.

The contract was changed while Fairchild still was chairman, one reason decreasing Ward's total pay and providing for a flat \$35,000 minimum payment.

Sherman Fairchild resigned in October, 1946, reportedly because he was not in sympathy with Ward's policy of decentralization. Ward's demands for a flat \$35,000 minimum payment.

► **Tangier-Shuttle.** Pacific Coast inmates

that a letter be sent to shareholders,

warning him against attacking Ward's contract as not a personal attack upon Ward.

But there is little doubt that Ward himself is the target of what is seen forward as a possible pay cut or cost savings. The scale of the corporation, headed by President L. B. Richardson, firmly stated that "Mr. Fairchild's demands were met and the company would probably fire Mr. Ward." Sherman Fairchild is undoubtedly responsible for that possibility.

Opposition to Ward's plan by Sherman Fairchild's friends to shareholders of the corporation caused them to renew a petition seeking either approval or disapproval of his opposition to Ward's contract. By early last week, Sherman Fairchild's office claimed, shareholders representing about 122,000 shares had indicated they agreed with his objection.

► **Odds Against.** Fairchild plans to present the results of his poll at the annual meeting that week. Odds are against his being able to effect any changes unless about 100,000 shareholders of record, with 2,753,817 shares shown outstanding, Sherman Fairchild holds 95,659 shares, or 4.14 percent, and is the largest individual shareholder.

Meantime, awaiting the day, the possible blocking of stock held to be held by investment firms which could easily be influenced by the corporation's favorable earnings record (which made a profit every year for the last four years), and he has led the company into the great new field of space exploration.

Fairchild. The stockholders gave no chance to pass upon the contract. It was voted only two weeks before the April, 1948, annual meeting, and could have been delayed for submission to stockholders "at any other reasonable time."

► **Corporation.** The directors have the right and power to enter into such contracts as Ward's, if it is necessary, prior to its bankruptcy, and the stockholders have

been given "the essential and up-to-date facts in the 1949 proxy statement."

Mid-Continent and Parks to Merge

Warning by the Civil Aeronautics Board that it would not be with downwind if its annual scheduled operation before the end of 1949 (Aviation Week, March 21) has apparently enabled Park Air Lines into a merger with Mid-Continent Airlines.

The carriers have entered into a non-exclusivity agreement subject to CAA approval—under which Park's feeder route structure will become the wholly-owned subsidiary of Mid-Continent.

J. W. Miller, MCA president, has stated that Oliver L. Parks, president of the leadership and founder of Parks College of Aeronautical Technology of St. Louis University, will not be removed from his position in the company, but will remain as the head of division of both carriers. Miller also pointed out that the Mid-Continent would operate under its own name.

► **Chicago-Park.** Under the proposed agreement, the Mid-Continent initially will begin scheduled flights from Chicago over separate routes from Sioux City, Iowa, and St. Louis via Sioux City and St. Louis via Sioux City via the rest of Park's centralized routes would follow as soon as possible.

On the Sioux City-Chicago run, intermediate stops would be Fort Dodge, Waterloo and Des Moines, Ia., and Jacobsen's Beloit, Wis. MCA currently serves only Sioux City and Waterloo.

The Sioux City-Chicago run would have intermediate stops at Springfield, Decatur and Champaign Urbana, Ill. At present, Park has no scheduled flights from any of these points.

Miller, founder DC-3 owner to those cities, among midwest airport facilities could be visited weekly, play days after CAA approval.

Bartow Rights Sold

Patent rights to the Bartow aircraft lighting system were acquired last week by the Lockheed Corp., Lockheed, through which company representations spread as "wholly-owned" arrangement between Lockheed, J. B. Farlow, the inventor, and Lure Metal Co., which manufactures Bartow lights.

Parties to the agreement, one source close to the transaction, is to make the Bartow system more generally available. The arrangement, final details of which were being worked out last week, is expected to benefit all three principals. Lockheed is a leading manufacturer of utility and small flying and racing aircraft and motor boats. It has a major plant in New York, Philadelphia, Chicago and Baltimore.

► **Headline News**



The Morris Mable (AM-1) shown above carrying a record payload for a single-engine aircraft. The Mable took off from the weight of 26,312 lb, including 16,650 lb. of equipment (three refrigerators and twelve 250 lb. bags of flour, coffee and macaroni) while lower Mable weighed 27,000 lb. and carried a 3,000 lb. load from Tivoli Tug

Effect of Tax Credits on Earnings

Revenue law provisions, plus renegotiations and profit ceiling make manufacturers' future results uncertain.

The aircraft manufacturing industry had a highly successful 1948, according to a compilation of the annual reports made available. Net earnings of the group probably reached about \$104 million. This same group of 15 aircraft and engine manufacturers experienced a net loss of \$12,905,000 during 1947 and slightly more than \$1 million for 1946.

The losses in previous years were due to various tax credits, including tax carry-back credits. For example, without these credits, the group's net loss for 1947 would have reached \$116,418,000.

By the same token, 1948 net earnings for some companies were increased by the operation of the tax carry-forward provision of the tax regulations. For example, Republic Aviation would have had to pay a federal tax of \$1,035,820 on its 1948 operations were it not for the carry-forward credit. Instead, it was able to apply against 1948 income that part of its 1947 tax which was not previously paid by its tax credits. In this instance, a reduction of \$405,000 in tax payments for 1948 was the result.

How Credits Work.—The workings of these credits, while very involved, have proved most helpful to the aircraft industry. At the conclusion of the tax debate credit features were working for the industry in enhancing a sensible approach of concession loans. The law was the long-standing right to carry back losses in current years to obtain credits on losses of previous years. This feature was helpful against wartime credits lost.

Although these latter credits may have been enhanced, the same principle continues to operate in a new guise. In other words, pending year's losses can be carried forward to apply against later tax liability.

For example, losses incurred during 1946 and 1947 could be applied against profits of subsequent years before the imposition of the regular tax rates. Of course, the now defunct feature is limited to the extent of the loans involved and was completely effective by virtue of past law, is no longer effective.

Companies Helped.—Most of the aircraft manufacturers report that they are credits during 1948. In addition to Republic, others benefitting by this feature include Lockheed and Boeing.

Years 1946, 1948 and 1947 have not reflected such claims in an audit in any of its financial statements.

Monogram, however, has also made provision in its 1948 accounts for an estimated refund of profits on incomplete contracts under the Virus Taxpaid Act. This provision amounts to \$570,000 and reduced reported net income by a corresponding amount, although Monogram's published 1948 net profit is \$2,391,511.

Profit Limitations.—In this case limitation through legislation caused last year which adds another major qualification to the present trend of earnings of the aircraft industry.

The Registration Act of 1943 specifies that all accounting resulting from fiscal 1949 funds is to be subject to renegotiation. Delays in 1948 were finally resolved by the regulations. With the exception of just enough however, fiscal 1949 funds will now be held and subject to this determination.

Other profit limitation comes in the Van Allen Taxpaid Act. This provides for a credit in the percentage of earnings on an item, although it does not provide for an guarantee that earnings will not fall that level. Once again, while moderate and expected changes are acceptable as to the fairness of this provision, cumbersome interpretations have proved very useful.

Unfinished.—The renegotiation process has yet to be tested under existing legislation. Yet, a series of annual objections are evident. The aircraft industry is unlikely to standardize accounting procedures and is essentially a manufacturing industry. As such, it is adapted to peaks and valleys. Few informed observers believe that any administrative process should be averaged over a period of years, giving effect to that peculiar characteristic of the industry. Such a process is not yet any year prior.

Lockheed declared that its federal income tax return for the year ended Dec. 31, 1948 is inadequate to meet its tax liability for the year. The extension by the Bureau of Internal Revenue of the time limit for the years 1940 to 1945 is not yet completed. However, the Lockheed management believes that its recent \$1,260,000 for federal taxes on income as provided by Dec. 31, 1948 is adequate to meet any deficiency of tax and related interests that may be asserted for all years not yet settled. Nevertheless until final determinations are made, a serious doubt remains.

Grumman Aircraft probably shows the most clear-cut tax treatment on its balance sheet. All tax items for the years up to fiscal 1945 have been settled. However, the company is making a claim for carry-back tax credits for the

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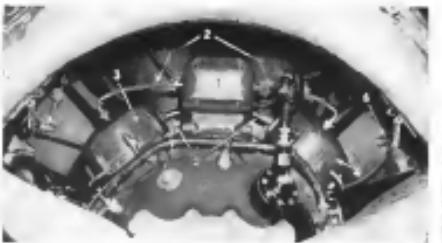
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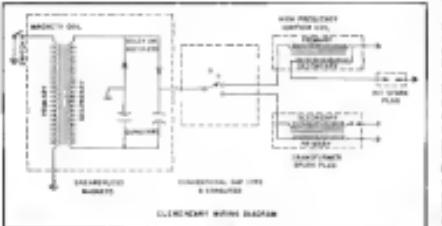
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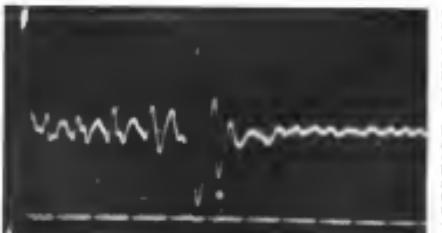
Case For High-Frequency Ignition System



Closeup of C-9 high-frequency ignition installation. 1, Dual 11 magneto; 2, low tension lead; 3, capacitor to distributor; 4 and 5, right and left distributor; 6, horners; winding portion of coils; 7, coil assembly; and 8, transformer coupling.



Elementary wiring diagram of high-frequency, low-tension ignition system



Spark gap current oscillation in high-frequency sparkplugs

Low-tension installation intended to offer relief from high-tension ills.

By C. J. Watten*

A new low-tension, high-frequency, low-tension ignition system for aircraft is continuing the tradition of pointed-out manufacturing a long introduction by the General Electric Co.

One design of the system, 40 percent lighter than conventional high-tension installations, is being evaluated in flight service on a Convair Lear by Pan American Airways, and other designs are now in the advisory stage of development. The system has the features shown in the accompanying wiring diagram, which illustrates several of the recent shortcomings of high-tension ignition.

The new arrangement consists of a simple magnetic-rotor magneto, a horners, a capacitor, and a coil assembly, capable of furnishing high-frequency, low voltage impulses to each sparkplug through a low-tension radio shielded harness. It is available with either high-frequency transformer-type sparkplugs or individual high-frequency coils for use with conventional high-tension sparkplugs. Either type has a spark discharge frequency of approximately 1.5 usec.

Operating Difficulties. With numerous in and out of phase changes during the past ten years, conventional high-tension ignition systems have been continually held poised to provide satisfactory performance.

Desired for increased ignition voltage because of high engine power, more low and high voltage factors, increased distributed resistance of sparkplugs, and other areas such as carbon loss or breakdown at high altitude have caused these systems to become very large, heavy, and not very efficient in terms of energetic spark energy.

Operation of engines with highly loaded fuels under extreme weather and altitude atmospheric conditions, with wide ranges of engine power ratings has exacted more demanding performance, not easily met by any ignition system. Thus, flight delays and maintenance expense stemming from ignition

* Aerospace and Defense Systems division, General Electric Co., Schenectady, N.Y.

particularly sparkplugs, rank high on the list of powerplant complaints with most airline operators.

The growing performance and maintenance demands on high-tension ignition were brought forcibly upon the ignition industry during the war, when it became necessary in change flights at relatively short lead times to provide reliable system performance. Thus, stemming from developments in much of flight from the site of high-tension systems, low-tension, high-frequency ignition with low-tension ignition has evolved as the most practical solution.

An 18-cylinder engine requires 24 million alternately timed sparks per liter of engine capacity. It is requiring a great deal of a high-tension ignition to deliver 24 billion accurately timed sparks before any adjustments, lubrication or replacements are allowed, but that is not exactly what is expected. Nearly 100 million sparks from each of four ignition systems are required for the most intensive flight around the world.

Size, Weight, Aspects. For radial aircraft engines, timing compensation is most critical, and the high-tension ignition system designer is forced to be heavier than necessary, since for most aircraft the broken spark occurs at either than maximum fuel and voltage conditions. The extra energy in cylinders having the least compensation causes greater unignited combustion.

High-tension magnetic designs for aircraft having 24 cylinders at maximum bore/borehole proportions when adequate breaker plate is provided. Obviously, low-tension distributions would reduce size and weight and provide satisfactory altitude operation. However, while designed with a high frequency, conventional, straight low-tension system requires rather large individual transformer coils for stepped-up operating voltage.

Sparkplugs. Consider—Sparkplugs have been the chief source of trouble with high-tension systems, although blame is frequently attributed to these and other ignition and engine troubles are at fault.

Changes in sparkplugs, electrodes, gaskets and methods have provided improved low-tension ignition on some engines. Platinum-titanium electrode alloy and tungsten lead into the sparkplugs center wire have provided considerable reduction in electrode erosion rates.

On high-tension systems power has forced that certain engines are quite far removed at the spark than conventional 602, mature, electrode plug provide. Since has also forced that improved low-tension firing can be obtained with fine wire electrode plug or by opening the gap to 0.02 or

0.04 in massive electrode plugs. On certain engines and having especially low exhaust air velocity or combustion, massive electrode plugs operate satisfactorily from the lean mixture firing standpoint, particularly when the initial gap settings are about 0.12.

Then, from the economic standpoint of sparkplugs operation, it is desirable to determine which electrode configurations provide both maximum performance and life.

Plug Improvements. Difficulties associated with carbon and lead loading have been overcome by having the electrode rates for other major improvements, such as providing longer leakage paths to ground over the sum of the carbonized.

Other design changes and improved ceramic materials have provided exceptionally uniform ignition by maintaining heat ratings of any one plug type within a very narrow range. This allows operators to select the hottest running plug to prevent carbon loading with little getting an increased borehole pattern from propagation caused by one plug type two hot.

While hot running plugs reduce carbon loading time, but, particularly if oil is entering the sparkplug, they have comparatively short and low reliable life because they are incapable of withstanding combustion temperatures as well as do colder running plugs.

These plug improvements plus others in magneto and harness design have afforded some relief from burning problems in high-tension ignition. It is a significant factor, however, that no high-tension system can operate reliably at high altitude unless plugs are removed at regular intervals, straight low-tension system requires rather large individual transformer coils for stepped-up operating voltage.

Sparkplugs. Consider—Sparkplugs have been the chief source of trouble with high-tension systems, although blame is frequently attributed to these and other ignition and engine troubles are at fault.

Changes in sparkplugs, electrodes, gaskets and methods have provided improved low-tension ignition on some engines. Platinum-titanium electrode alloy and tungsten lead into the sparkplugs center wire have provided considerable reduction in electrode erosion rates.

Electrode Settings. Even with these changes, leakage current densities are readily visible at sea level pressure on systems designed for aircraft. Frequent cleaning of sparkplugs, insulation and insulation walls have been necessary to remove carbon and metal deposits and to prevent electrical losses. Literally millions of otherwise good plugs have been thrown away because of high electrical leakage.

Gasoline engines will help this condition by cleaning out fine leakage paths but wider high-altitude-type terminals are provided for both sparkplugs and other high-voltage connections in the harness, electrodes

and coil will still have to be next frequency for high altitude operation.

If a choice of electrode settings were possible, few would choose the present 0.12 (0.10) setting as providing optimum lean mixture ignition. The automotive industry is thoroughly cognizant of the superiority of 0.03 to 0.05 gap settings and can get away with them because of altitude-level operation of the ignition system. Since it is generally accepted that wide electrode gap settings afford the best ignition of lean mixtures the reason for this phenomenon is not clear.

In addition to obvious benefits may be derived from the fact that two more and selected materials can be used while gaps, other important electrical discharge characteristics are obtained. As the gap is increased, more energy is stored in the secondary distributed inductance and less in the inductance of the coil. At the gap will, therefore, break down at a higher starting voltage with a much larger portion of the total energy being dissipated across the gap in excessive current.

Supposing the idea that total energy in the discharge rather than total energy in the spark is the more important factor contributing to good ignition, the fact that series resistors of 10,000 ohms can be inserted in the plug which drop out the initiating component without affecting ignition ability, and in addition, provide a reduction in electrode erosion rates up to 50 percent.

Moderating. Basically, 0.12 settings are selected for aircraft engines to keep ignition voltage demand at a minimum and that value elevated above the normal system. By starting with a 0.12 initial setting, the effect of rapid electrical circuit changes is reduced with high-tension systems is reduced.

Sparkplugs frequently suffer, however, because of changes in the insulation resistance of their various short current paths to ground caused by lead, carbon, moisture or ion accumulation on the firing end of the plug, or as a result of other contamination involving low insulation resistance in the plug terminal, soil, harness, or distributor.

High-tension systems normally run for 100,000 to 200,000 hours depending on gap settings and the condition of other insulation leakage paths in the system. Unfortunately, operating conditions frequently cause this low resistance to occur.

The new high-frequency system will apparently be prototypical with short settings as low as 0.005 inch, which is far better than can be expected with any system not incorporating a high-frequency discharge circuit. Advantage of high-frequency spark discharge in high partially loaded plug is proving itself in

right sources on the new system.

► **Spark Detention**—As a result of open circuit with high tension ignition, a widely accepted and well-founded concept has developed that ignition stability of a spark is largely the result of its inherent frequency and total amount of energy deposited.

It is believed that the stability of high-tension systems to supply all the losses encountered along the distribution line and yet have sufficient voltage and power to ignite the fuel under widely varying conditions, has led to the belief that the performance of a magnetoo is determined by determining whether or not it is at the "full-of-fuel" rating.

In light of recent experience with high-frequency and low-tension ignition it can no longer be accepted that a good ignition spark must have high total energy and the characteristic form of a highly inductive spark such as produced from the ball-and-rod variety of magnetos.

Actually, it is now believed that a large portion of the arc-like discharge of inductive spark energy occurs after ignition takes place and is mainly determined in that the current discharge removes electrode erosion areas.

Since these spark volume must be

used to ignition temperature, the spark energy deposited in the electrode gap must be sufficient to raise the temperature to about 1500-1550 F. Once the voltage has broken down the gap, the rate of current discharge is the principle factor in raising the temperature. Thus if electrodes are of relatively large size, causing rapid gap cooling, more current deposition in the arc is required to sustain ignition temperature at low discharge frequency.

In connection with the development of an improved system, General Electric has investigated the electron currents emitted from the electrodes of various magnetos. The way to obtain the most efficient use of system energy and to better understand the stability of relatively low energy, high-frequency spark discharges to far various fuel-air mixtures as well as high-tension ignition of more than three times greater spark energy.

Assuming a point source of ignition, particularly from the thermal theory, the greatly increased rate of energy dissipation and correspondingly high current discharge offer a plausible explanation of the stability of high-frequency spark discharge to ignition combustion.

► **On-Off Graph**—Studies of high-frequency ignition characteristics according to the new system have shown that 60% high-tension discharge power can be obtained from these of high-tension spark discharge except for duration. There are several mechanisms of very high ignitability current and very little stability are noticeable.

The can be seen in the accompanying photo showing high-frequency ignition conditions occurring in the gap of a typical transformer plug at the end of a long shielded lead. The high rate of capacitive current discharge raises gap temperature rapidly and is then conducive to reducing ionization temperature with a minimum of heat loss. It is shown that through low about resistance current leakage.

In effect, the stability of high-frequency to ignore low short-circuit current more efficient use of the current available to sustain combustion and, more important, prevents melting of potentially heated plugs.

While high frequency is no panacea for all lead-discharge difficulties, results of tests indicate it will be a great help.

► **System Description**—Some exceptionally low ionization running has recently been completed with a hermetically high-frequency ignition system having less than 4 the average spark energy of conventional high-tension systems. This system is a high-tension system as commonly understood in high-tension designs, suitable for high-pressure engines.

The system has a high-tension dual magnetic circuit which, by the use of a number of narrow, parallel slots, pro-

duces the required speed voltage, characteristics without the use of booster points. This magnetic circuit induces two opposite polarity electrical impulses of approximately 1500V in the coil winding for each time that a plug fires.

A simple voltage-doubler recent consists each magnet and coil with an induction capacitor through small aluminum oil filter (not using die gas). The energy storage feature allows the weight of the magnetic circuit to give a greater spark energy.

The rectifier circuit holds the charge on the capacitor until the current reaches the starting threshold current with a relatively low voltage drop, which is much lower than the stored energy is discharged at high-frequency through a conventional plug gap distributor. All timing is accurately polished by the simple and dependable means described above.

Approximately 1200A are distributed to each transformer coupling plug by a high-tension, low tension harness. With relatively low voltage distribution, experience leading lines the harness are few. The system, together with the very small distributed capacities of the sparkplugs secondary circuit, large electron flows at a maximum, giving a high current percentage at generated voltage and current available at the plug electrode gap.

► **Plug Type**—**Endless Rotors**—The Clean Burn Spark Plug Co.'s HF-57 type transformer sparkplugs used with the new system have a very small high-frequency coil wrapped within the plug in a design which carries up all high voltage within a one piece case insulation.

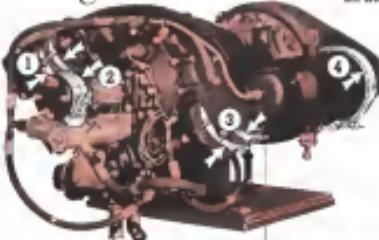
The coil is vacuum pressure impregnated with a high temperature insulation and is hermetically sealed by a ceramic glass sealant.

All plugs are required to pass a minimum of 1100 peak rated voltage at 60,000 rpm. The required ultimate discharge being developed at 100,000 rpm is nearly 1000 V at 60,000 rpm. The required current will exceed plug and their output voltage is well above spark plug voltage required with the highest cylinder head pressure.

Electrode erosion may be overcome in engine test and flight operation have been it that normally encountered with high tension systems. Successful low voltage operation with 602 discharge gaps have been obtained, but in contrast to high-tension systems, high-frequency systems do not require service voltage below 1200 to pass through adequate altitude performance and long periods of operation before electrode erosion necessitates the gap enough to cause surface.

Calibrating high-frequency plug operating voltage will in cylinder necessarily repairing harmonic plug to prevent leading. This experience with cold plug is limited but it is antici-

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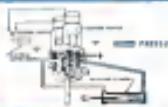
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pointed that future flight service will substantiate these preliminary indications.

► **Benefit.** Cleaned systems, the advantage of the new system over those not incorporating high-frequency current, these factors are considered important.

► **Weight.** A reduced weight economy in high as 90 percent are obtainable.

► **These are no breakers.** Maintenance on breaker points, caps, and lubrication which is not necessary, and equal energy is supplied to all plug with the same current change in service.

► **Electric starters.** On down. Reliable performance for long periods without maintenance is now possible because of very low current rates.

► **Corrosion and lead breaking difficulties are substantially reduced.** High frequency will fire plug in the presence of either transient or constantly low thrust conditions providing they do not fall below 1000 ohms.

► **Simplified installation and maintenance are afforded.** External magnetic filtering is eliminated and magnet-to-engine torque simplified. Current and interelectrode spacing of all major power line engine are provided which leaves little or no adjustments between overhaul.

► **No lubrication is necessary except at engine overhaul.**

► **No special tools or instrumentation are required.**

► **A simple start-stop option is provided and radio noise prints are held to a minimum.**

► **The system is relatively unaffected by atmospheric changes.**

Portable Instruments

New *ad hoc* portable instruments announced by Winters Electrical Instrument Co., 5100 W. 72nd Street, Apt. No. 100, 7, N. J., feature an insulating wedge extending full width of unit, curving around each side to insulate positives and providing high insulation of 24-inch anode. Equipped with hand-crafted carbon anodes and knife-edge阳极, both a-c and d-c types are shielded against external magnetic fields. It is stated that the devices have new self-shielding mechanism providing such high protection that magnetic field created by conductor carrying 7,000 amp at distance of 5 ft. cannot exceed an induction of less than 4 percent of full scale value. Available are *ad hoc* voltmeters, ammeters, galvanometers, milliammeters, millivoltmeters and millivoltmeters, a-c voltmeters, ammeters and milliammeters. Some of the meter type instruments, solenoids and milliammeters, have accuracy within 14 percent.

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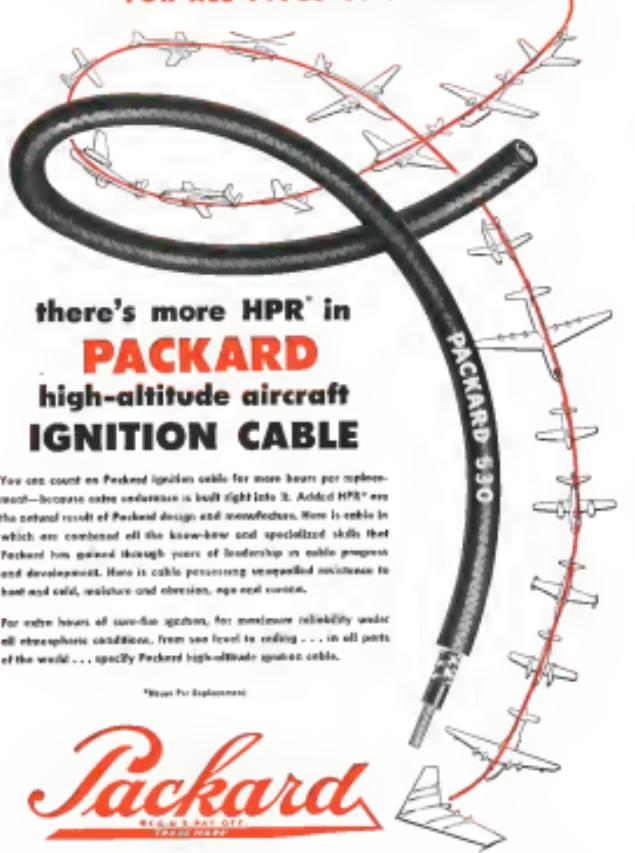
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PACKARD ELECTRIC DIVISION, General Motors Corporation, Warren, Ohio

AVIATION WEEK, April 25, 1949

How Chance Laws Cut Production Costs

Statistical quality control is new technique permitting substantial savings, close designer-shop coordination.

More than 1200 U. S. firms are cutting production costs by "taking a chance." By placing parts far to the left of the chart, they have taken up their position behind the table, where the odds are better than in front of it.

Although production costs have long paid for service to statistics at the statistical quality control, the use of statistical quality control has an added economic advantage and position with the part of statistics to continue management that figures really don't lie.

The new system consists simply of changing all but the "natural" deviations of machine tools in the production of parts and leaving the tolerances required for assembly entirely up to chance.

Thus, the hallmark of the new system is apparent, for its acceptance is based on "simplification to three to 100 µ" of "precision" design and fabrication requirements that can be based on a system wholly unhampered by the new era.

► **New System Works**—First step in the new system is the preparation of a control chart for each machine required in the fabrication operations. This type chart was first designed by Dr. W. A. Shewhart, Bell Telephone Laboratories, in 1924. By averaging results of small groups of measurements, rather than individual piece readings, it indicates the "natural" control of the latest, greatest, etc.

The control chart is a graph of machine parts made at his work on this chart as production progresses and as long as only those factors influence it, the machine is at work, the tolerance of the finished parts will remain within the natural limits. As soon as the operator notices a sample that exceeds this tolerance, he knows that something is wrong and makes the required adjustment.

Thus, waste material and "rejects" are eliminated, and, as will be shown shortly, virtually all of the parts produced by this machine will be usable as assemblies.

Once the "natural tolerance" of the machine has been established with certainty, then as further reduction can be made possible and recognition of this fact justifies maximum tolerance demands being made upon it that only increase rejected parts and run up costs.

► **Machine Setting**—The various factors at work on a machine in operation

combine in various ways to produce variation errors in the finished part.

Thus, it is possible that they will combine to cancel out their effects during an operation, resulting in the production of a perfect part. It is also possible that they will, by chance, combine adversely, producing the worst possible part.

►

These adverse combinations of selected variables can be either toward the large or small limit, and between these two extremes lies an average that is taken as the setting of the machine. The deviation of the output of the machine from this average or setting follows a natural law of chance that is shown graphically in Fig. 1.

The standard deviation is defined as the square root of the arithmetic

mean of the squares of the deviations from the mean, or the root mean square value. Plus and minus three standard deviations are taken as the natural tolerance of the machine, since they will include 99.7 percent of all the values.

Then, if no standard variations are taken as the natural tolerance of the machine, it follows that the machine will produce a part with a greater tolerance only 0.3 percent of the time, or a little less than one-third of one percent.

► **Nonconformance**—Since the main purpose of any tolerance is to guarantee satisfactory assembly, it is in the assembly operation that the new chance laws are proved. To provide experience with a ready-made tool, Mr. Charles Shewhart, chief inspector at United Aircraft Corp.'s Hamilton Standard Propeller division, prepared the nomograms shown in Fig. 2. This plots the units of compound tolerance on the right and left of the center, the units of combination tolerance on the center line.

To illustrate the astonishing way chance laws a typical three-bladed propeller tolerance is shown the SAE 3-21 class 3 thread, which permits a tolerance of 0.0026 for each component, or a total variation from one end to 0.0072 inches.

To determine the total tolerance of this SAE, based on machine using control charts, place a straightedge against part 3 on both the left and right lines of Fig. 2 and 1.09 from the middle line.

This means that if the above machine used to produce the parts was not capable of producing the 0.0026 tolerance on the body, the control chart would be continuing the average tolerance of each of the midpoint of their respective tolerance ranges, the tolerances would vary from 0.00005 to 0.00445 inches. The difference between these values is 0.00397, actually total tolerance. Accordingly, a total of 0.0015 or about 35 percent of the allowed assembly tolerance would never be used for all practical purposes.

Another example, much obtainable from Fig. 1 is to compute this standard tolerance for a class 3 fit with that required for a propeller hub. Place the straightedge horizontally on the middle line of the nomogram at 0.0012 (5.7) and read 3.7 (0.0037) in either side as the allowable total tolerance for each component. The standard SAE tolerance for each component of a 120 class 2 thread is 0.0035, which means that the use of control charts will allow you to get that 1 assembly that class 2 part.

► **Application**—To see just how well

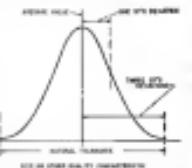


Fig. 1. Normal curve of the natural tolerance of a machine versus the number of standard parts produced.

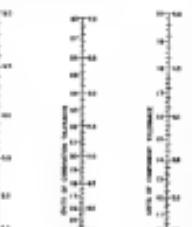


Fig. 2. Nomograms for combining tolerances.

MTI wipes out ground clutter

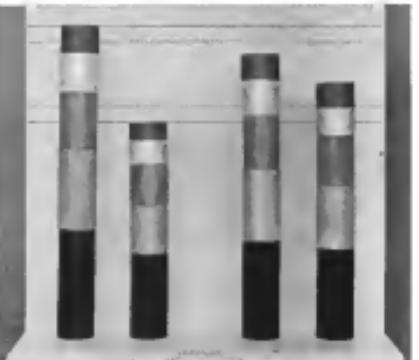


ANOTHER important development in radar tracking is the use of improved developments at GCA* itself. At GCA present, the rate and range of all targets, as MTI penetrates and wipes out all ground clutter from the surveillance screens, shows only moving targets. Tracking and identifying aircraft no longer requires the close, tedious concentration of a specialist operator. Exact bearing and range of every aircraft within a 5-mile radius are now known instantly and easily by all tower personnel.

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LETTERS

Powerplant Failures

Mr. Wink's excellent article on the Mar. 25, 1969, issue, emphasizes the importance of the control of the high-tension pressure tubes. While he points out the function involved in maintaining (lack of control) the fuel system spanner holes over the air intake, I would like to add that the valve coated with the special paint is not a mere necessary item but is for a lubricator.

It is unfortunate that the light aircraft industry is unable to find the time to develop a proper preventive maintenance control system for aircraft. A preventive maintenance system would be of great benefit. Take under advisement that the most critical control problem or fuel injection is the extreme pressure required as for injectors parts, with pressure being maintained because of the present small volume of fuel.

J. E. Hauseman
Bell Aircraft Corp.
Buffalo, N. Y. 14201

Bonanza vs. Navion

The Mar. 21 *Aerospace Week*, "Content Fly Bonanza vs. Navion," article left me with some doubt as to the performance of a little new Navion. The type of article has both great interest and some special potential problems, and I would like to add my comments and some words of slight agreement towards the Bonanza. The writing was generated by some other legal action on Edson's flight (which could not have been made on a rule-pilot's part), together with your Bonanza vs. Navion.

On March 1, a "Take off and climb" competition took place at Rosemont. As part, Rosemont Field (Los Angeles suburb) between a Navion, NC2000, and a Bonanza, NC2040, was the Navion. The Bonanza was the 57th built by Beech and was a standard factory model except for additional Milt. Flying equipment. The Navion is owned by Merlin Stoen who has done extensive work on the aircraft. The Navion is a spacious, when instrumented, short take-off and landing, short field, quiet, quick, and in short, like the Bonanza. His Navion was so equipped, and as witness to, instrument, prop had been removed and polished.

With a 50 mile circumlocution and about the country, the two ships took off simultaneously. Mr. Stoen stated that the Navion propeller was at 2000 rpm on take off while the Bonanza turned 1950 rpm on the ground. Both had pitch and roll control. The Bonanza had only two main truss supports, 20 percent more wing loading, and a 10 percent heavier weight. Merlin Stoen's Navion had Mr. Stoen's choice instrumented the cockpit. Together with Rosemont expert standards and the wind on board, the Bonanza was well instrumented. The Navion was unable to follow the steep climb of the Bonanza so that when the Bonanza

had reached 1800 ft. the Navion was approximately 1600 ft. directly below. No wages were made but Merlin Stoen was a good sport about the control and later remarked to the magazine, "You certainly got me in my place." He also explained that he had the use of a small Bonanza similar to NC4147.

In my personal experience the only way to measure performance characteristics of aircraft is to find suitable space where performance performance may be observed. While you can do 21 different things, you are limited with a Cessna 172. I am sure you realize that the power which is taken from the engine is the important factor.

1500 hp of 2400 rpm is utilized by the Bonanza and 1700 hp was the engine. He also stated that the engine was not for the Bonanza to go in more often, although perhaps Beech would not recommend such use because of a power plant.

As to longevity, with 49 deg. of deflection it would appear that a Bonanza could easily develop shear in an absolute, although my experience with both kinds of gear pins that the shear load limit of the Navion greatly reduces bending action as the weight of the gear is transferred rapidly from nose to tail. In addition, the Bonanza has a solid wheel of the Bonanza allows more effective braking.

Finally, on Mar. 24, 1969, at 21 min. *Marine National Business News* you quote report from National Business Unit, Comptroller of the Currency, "The Bonanza is a model of soundness and stability, and its record of soundness is before disposal of the Navion sometime ago in favor of a Cessna 175.

This is the first time I have ever written in defense of an engine or prop engine and I am sure that the Bonanza is not the Navion. I am not 100% for one reason or another, but something has been heard or known suggests that this outstanding little airplane should be given every break it deserves, which is the reason for this article.

W. W. Schreiber, General Manager
Shepherd, Doctor & Equipment Co.
Los Angeles, Calif.

Odom Achievement

I have read your editorial on Bill Odom's achievement in the Mar. 25, 1969, issue of the *Mar. 25, 1969, Aerospace Week* and I am very interested. I am most hopeful that all engineers involved will read it and take it to heart.

O. A. Briscoe, Secretary Treasurer
Beechcraft, Doctor & Equipment Co.
Wichita, Kansas

He Bets On United

Your column has shown some worth reading and I have gathered that you are willing to back them up. Referring to your

of today, "Which Will Win But Out?" (Mar. 25, 1969, *Aerospace Week*), I take a fly-by and conclude: An American aircraft will take much longer to come on stream.

You seem to be very concerned about how United will fit in big new transports without fare cuts. Although you specifically mention delivery of the fleet of Stratocruisers, I believe you mean the 100 to 120 to 140 seaters. The 100 seaters seem to be in use. According to your own report United is going to show more than a 15 percent in revenue or passenger savings for the first quarter of 1969 and the same period in 1968.

Since the second and third quartiles have always been the last months in an aerospace, it appears to me that United would pick a full season to launch "carries rates," and their current not a wisdom we should ignore.

Somewhere some senior banker who has just paid repeat reference to "the class lesser lesser, complete to full class seats" is going to be disappointed in his flight, because the seats will be removed for the first quartile.

Please advise if we have a hot and name one pipe. Mine will be a lifetime web stepson to *Aerospace Week*.

D. E. Dean
900 Whetstone Place
Dayton, Ohio

Instrument Ratings

I read with a good deal of interest and approval, the letter Mar. 14 issue 1, III, *Management of Aviation Training Center* in Chicago, regarding instrument ratings.

I have always been of the opinion that the present regulation does not do us any good being adequate for a new high-weather aircraft. I am not in favor of the present system of instrument ratings. I believe it would be better to remove the rating of instrument ratings and believe that a competent instrument panel of pilot should constitute my proposed new requirements. In my thinking, the suggested panel should include the following:

- 1. CAA flight experience
- 2. Approved flight school graduation
- 3. AOPA flight ratings
- 4. Aircraft manufacturer (probably Beech)

At the moment I am not prepared to make a suggestion of what we should have but I am very willing to hear of making the holding of an instrument rating more stringent. I would like to take this as an example that an aircraft that is operated on a FIR flight must positively be equipped with a full panel instead of the usual primary group (meaning mostly primary instead of auxiliary, auxiliary, auxiliary, etc.). If this one, regardless of the instrument panel of the plane, would not make flying with the basic panel instrument machine with only a primary group.

W. H. C. Wink, Aerospace Pilot
Division of Aviation
Department of Commerce
State of New York
Albany 7, N. Y.



For the instrument reader, Superior fabricates tubing as cut, end-caps or custom lengths, shaped to "standard" specifications—or your special needs. Flat and elliptical ends for boudon springs can be produced in any analysis shown in the accompanying table.

Superior Shaped Tubing Specification and Tolerance Sheets list all the shapes and sizes for which tools are prepared and in stock. While the specification sheets are not available for general distribution, a Superior representative will gladly call at your office to review your design, analysis and delivery requirements.

You are invited to make full use of this Superior service—your request will receive prompt attention.

Superior

1000' to 10,000' in lengths 1/2", 3/4", 1", 1 1/2", 2", 3", 4", 5", 6", 8", 10", 12", 14", 16", 18", 20", 24", 30", 36", 42", 48", 54", 60", 66", 72", 78", 84", 90", 96", 102", 108", 114", 120", 126", 132", 138", 144", 150", 156", 162", 168", 174", 180", 186", 192", 198", 204", 210", 216", 222", 228", 234", 240", 246", 252", 258", 264", 270", 276", 282", 288", 294", 200", 206", 212", 218", 224", 230", 236", 242", 248", 254", 260", 266", 272", 278", 284", 290", 296", 202", 208", 214", 220", 226", 232", 238", 244", 250", 256", 262", 268", 274", 280", 286", 292", 298", 204", 210", 216", 222", 228", 234", 240", 246", 252", 258", 264", 270", 276", 282", 288", 294", 206", 212", 218", 224", 230", 236", 242", 248", 254", 260", 266", 272", 278", 284", 290", 296", 208", 214", 220", 226", 232", 238", 244", 250", 256", 262", 268", 274", 280", 286", 292", 298", 200", 206", 212", 218", 224", 230", 236", 242", 248", 254", 260", 266", 272", 278", 284", 290", 296", 202", 208", 214", 220", 226", 232", 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PRODUCTION

Missiles to Reform Production

Airframe firms face real mass production problem, where daily output will have to be in thousands.

U.S. defense companies are faced with the necessity of radically changing their manufacturing techniques to deal with a new element: mass production of graded missiles.

The situation already is becoming apparent in the growth of the missile industry, planning and testing for the \$30 million worth of production orders coming from Air Force, Army and Navy sources, Navy Ordnance, and Bureau of Aeronautics.

What Harry Woodard, former press agent of Consolidated Vultee Aircraft Corp., told the President's Air Policy Conference in the fall of 1947 may longer hold true:

"We anticipate that the mass-factoring process you graded missile will be fundamentally similar to those of validated aircraft."

From Woodard's generalization develop two basic requirements of missile production:

- Increase manufacturing methods.
- Complete reversal of supplier production objectives.

An Analysis White Paper shows that the aircraft industry is aware of these requirements and is using them to further missile production planning. ▶ **Thousands vs. Hundreds.** Once past the development stage, the industry will find itself for the first time turning out hundreds of units but actually thousands of missiles in the "medium" category.

Airplane plants now devoting 80 percent of their capacity to aircraft fabrication, long range research, test, 28 percent to machine operations, will be forced to tool up so as much as 88 percent machine operations in missile airplane manufacture. Missile sheet metal fabrication may involve no more than 20 percent or less of production facilities. ▶ **Also Different.** Obviously, the graded missile will be designed for a short service life as opposed to the basic requirements of designing and producing an airplane for continuing maintenance.

Dimensional tolerance allowances is airplane manufacture will have to be tightened to missile manufacture. Manufacturing dimensions which can be converted after a single batch has been delivered to the customer can now be allowed in a missile, which makes but

unacceptable by modifications which have proved to be the greatest influence against the learning curve.

▶ **How Much Aircraft?** One aspect of missile manufacture is stepped in intensity. This is the question of just how much of the validated product will be the manufacturing responsibility of the defense contractors.

The averaging of missile design shows that approximately one third of the product is software, and the remainder guidance, control, and weapon systems.

Some defense companies seem, at this time, to be satisfied with the prospect of holding only the software and delivering it to assembly depots where the "hardware" will be installed. Often we are plagued by contracts under which they will receive control and propulsion components from accessory manufacturers and then perform complete assembly.

A number of manufacturers appear to feel that missile issues and assemblies are as tightly integrated that they should be the whole job, even with subcontract electronic and control assemblies and power units.

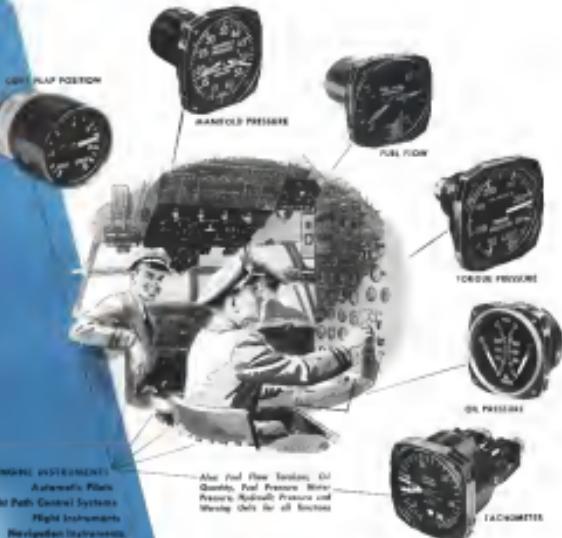
Indicators of the thinking of the latter group may be seen in their creation of electronic engineering units within their factories, established at this time, to "standardize" the extension of their influence to vendor sources.

▶ **Secretary Sels-Schaeffer** recently announced that this is a distinct threat to their participation in missile mass production, and accordingly are now prizing to conserve military procurement agencies that they have no interest in the defense end of the business, but do have acquisition production knowledge which no supplier company, devoted to aerospace structures, can hope to achieve.

While defense manufacturers would disown the possibility of a serious interest in contracts to build aeronautical units, it appears that there will be to their own interest to do the whole job. Some admit that profits from missile production will be considerably less than those gained from airplane manufacture, and that profit margin might be marginal.

A significant aspect of missile manufacture is that it need not await the acquisition of actual numbers to reduce peak production.

For some time to come the bulk of military missiles will be in small and medium quantities, with weights ranging from 2000 to 20,000 lb. in missile ordnance. Relatively few supersonic replacement missiles weighing above 2000 lb. and ranging upward of several times the size and weight of the V-2, will be constructed immediately.



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and aircraft fuel and
control systems.



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and other places or times
than 100,000 ft. and test
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Invitations and Awards to Industry by USAF

An Manned Environmental Enclosure Test
station model available to Aviators West
the latest bid invitations and awards shown
on this page. Requests for further information
time should be addressed to Contracting
Officer, AFMC, Wright-Patterson AFB,
Dayton, Ohio, telephone MCFP 5527.

Over Hydro-Aire, 200, Brooklyn, on a
lot of \$110,000.
For 20 engine substation (40-11890),
Contractor: Hydro-Aire Corp., Dayton, Ohio,
Telephone MCFP 5527, on a lot of \$110,000.
For contracts worth \$100,000.

Contractors starting—Philip Morris Co.,
Bronx, on a lot of \$44,000; and General
Precision Inc., Brooklyn, on a lot of \$124,000.
For contracts worth \$100,000.
Over Hydro-Aire Corp., Dayton, Ohio,
on a lot of \$100,000.

Abstracts of Bid Awards

For 20 engine substation—Hydro-Aire Corp.,
Dayton, Ohio, on a lot of \$110,000.
For 20 aircraft substation (40-11890),
Contractor: Hydro-Aire Corp., Dayton, Ohio,
on a lot of \$110,000; and Washington
Aviation Corp., Dayton, Ohio, on a lot of
\$110,000.

For 20 aircraft substation (40-11891),
Contractor: Hydro-Aire Corp., Dayton,
Ohio, on a lot of \$110,000.
For 20 aircraft substation (40-11892),
Contractor: Hydro-Aire Corp., Dayton,
Ohio, on a lot of \$110,000.
For 21 aircraft testbed (40-11894),
Contractor: Hydro-Aire Corp., Dayton,
Ohio, on a lot of \$110,000; and Washington
Aviation Corp., Dayton, Ohio, on a lot of
\$110,000.

For 20 engine substation (40-11891),
Contractor: Hydro-Aire Corp., Dayton,
Ohio, on a lot of \$110,000.
For 20 aircraft substation (40-11892),
Contractor: Hydro-Aire Corp., Dayton,
Ohio, on a lot of \$110,000.
For 20 aircraft substation (40-11893),
Contractor: Hydro-Aire Corp., Dayton,
Ohio, on a lot of \$110,000; and Washington
Aviation Corp., Dayton, Ohio, on a lot of
\$110,000.

For 20 aircraft substation (40-11894),
Contractor: Hydro-Aire Corp., Dayton,
Ohio, on a lot of \$110,000.
For 20 aircraft substation (40-11895),
Contractor: Hydro-Aire Corp., Dayton,
Ohio, on a lot of \$110,000.
For 20 aircraft substation (40-11896),
Contractor: Hydro-Aire Corp., Dayton,
Ohio, on a lot of \$110,000.
For 20 aircraft substation (40-11897),
Contractor: Hydro-Aire Corp., Dayton,
Ohio, on a lot of \$110,000.

For 20 aircraft substation (40-11898),
Contractor: Hydro-Aire Corp., Dayton,
Ohio, on a lot of \$110,000.
For 20 aircraft substation (40-11899),
Contractor: Hydro-Aire Corp., Dayton,
Ohio, on a lot of \$110,000.
For 20 aircraft substation (40-11900),
Contractor: Hydro-Aire Corp., Dayton,
Ohio, on a lot of \$110,000.

For 20 aircraft substation (40-11901),
Contractor: Hydro-Aire Corp., Dayton,
Ohio, on a lot of \$110,000.
For 20 aircraft substation (40-11902),
Contractor: Hydro-Aire Corp., Dayton,
Ohio, on a lot of \$110,000.
For 20 aircraft substation (40-11903),
Contractor: Hydro-Aire Corp., Dayton,
Ohio, on a lot of \$110,000.

For 20 aircraft substation (40-11904),
Contractor: Hydro-Aire Corp., Dayton,
Ohio, on a lot of \$110,000.
For 20 aircraft substation (40-11905),
Contractor: Hydro-Aire Corp., Dayton,
Ohio, on a lot of \$110,000.
For 20 aircraft substation (40-11906),
Contractor: Hydro-Aire Corp., Dayton,
Ohio, on a lot of \$110,000.

For 20 aircraft substation (40-11907),
Contractor: Hydro-Aire Corp., Dayton,
Ohio, on a lot of \$110,000.
For 20 aircraft substation (40-11908),
Contractor: Hydro-Aire Corp., Dayton,
Ohio, on a lot of \$110,000.
For 20 aircraft substation (40-11909),
Contractor: Hydro-Aire Corp., Dayton,
Ohio, on a lot of \$110,000.
For 20 aircraft substation (40-11910),
Contractor: Hydro-Aire Corp., Dayton,
Ohio, on a lot of \$110,000.

For 20 aircraft substation (40-11911),
Contractor: Hydro-Aire Corp., Dayton,
Ohio, on a lot of \$110,000.

Invitations to Bid

For openings up to 30 to 30 days after op
presentive issue dates shown in the following
bid proposals. Bid let contracts open
for bids will be issued to be presented will be
not available applicants who write bid
and evaluation modes.

The bid will be available for exam
without obligation to propose
holders, after bid let contracts date, at each
of the seven AFAC government field offices.
The bid will enable firms to specify
before writing or redesigning for their own
bid lets.

Procurement field offices location Boston
Army Base, Boston, Mass., Government
Aircraft Plant No. 4, Ft. Worth, Tex.,
998 8 Lockheed St., Chicago, Ill., Washington
Plant, 3900 12th St., Washington, D.C.,
and Los Angeles Division, 1230 South St.,
Los Angeles 24, 57 Bond St., N.Y. 4.

Contract bid proposals

McDonnell, St. Louis, Mo. 600,000, bid invitation
No. 40-11912, issue date Apr. 10, delivery
by July 1.

McDonnell, St. Louis, Mo. 600,000, bid invitation
No. 40-11913, issue date Apr. 10, delivery
by July 1.

McDonnell, St. Louis, Mo. 600,000, bid invitation
No. 40-11914, issue date Apr. 10, delivery
by July 1.

McDonnell, St. Louis, Mo. 600,000, bid invitation
No. 40-11915, issue date Apr. 10, delivery
by July 1.

McDonnell, St. Louis, Mo. 600,000, bid invitation
No. 40-11916, issue date Apr. 10, delivery
by July 1.

McDonnell, St. Louis, Mo. 600,000, bid invitation
No. 40-11917, issue date Apr. 10, delivery
by July 1.

McDonnell, St. Louis, Mo. 600,000, bid invitation
No. 40-11918, issue date Apr. 10, delivery
by July 1.

McDonnell, St. Louis, Mo. 600,000, bid invitation
No. 40-11919, issue date Apr. 10, delivery
by July 1.

McDonnell, St. Louis, Mo. 600,000, bid invitation
No. 40-11920, issue date Apr. 10, delivery
by July 1.

McDonnell, St. Louis, Mo. 600,000, bid invitation
No. 40-11921, issue date Apr. 10, delivery
by July 1.

McDonnell, St. Louis, Mo. 600,000, bid invitation
No. 40-11922, issue date Apr. 10, delivery
by July 1.

McDonnell, St. Louis, Mo. 600,000, bid invitation
No. 40-11923, issue date Apr. 10, delivery
by July 1.

McDonnell, St. Louis, Mo. 600,000, bid invitation
No. 40-11924, issue date Apr. 10, delivery
by July 1.

McDonnell, St. Louis, Mo. 600,000, bid invitation
No. 40-11925, issue date Apr. 10, delivery
by July 1.

McDonnell, St. Louis, Mo. 600,000, bid invitation
No. 40-11926, issue date Apr. 10, delivery
by July 1.

McDonnell, St. Louis, Mo. 600,000, bid invitation
No. 40-11927, issue date Apr. 10, delivery
by July 1.

McDonnell, St. Louis, Mo. 600,000, bid invitation
No. 40-11928, issue date Apr. 10, delivery
by July 1.

McDonnell, St. Louis, Mo. 600,000, bid invitation
No. 40-11929, issue date Apr. 10, delivery
by July 1.

McDonnell, St. Louis, Mo. 600,000, bid invitation
No. 40-11930, issue date Apr. 10, delivery
by July 1.

McDonnell, St. Louis, Mo. 600,000, bid invitation
No. 40-11931, issue date Apr. 10, delivery
by July 1.

AVIATION WEEK, April 25, 1949

PRODUCTION

YOU CAN BE **SURE**... IF IT'S
Westinghouse



A Lift and a Light for Berlin

"Aircraft's greatest achievement." That adjective has been applied many times to the Berlin Airlift. And rightly so. The Airlift has changed all military logistic concepts . . . lessons learned from the operation will affect the future of all aviation.

Among equipment selected for this vital task, the Westinghouse name appears with significant frequency . . . particularly in close applications where dependable performance counts most. Typical examples are shown on these pages. A new cargo hoist-electric powered and with many times the life of former units. Flashing hazard lights—that flash with a brilliance 9 times greater than the sun.

Transformers—dot can take a direct stroke of lightning without failure.

These illustrate why, on the tough assignments—this call for unfailing performance—you'll find Westinghouse equipment being selected. And it is also why Westinghouse is your best source of supply for all your aircraft needs—from tiny aircraft lamps to powerful turbo-jet engines . . . from radio and radar to giant wind tunnels.

Check the complete line of Westinghouse Aircraft products. Call your local Westinghouse Office, or write to Westinghouse Electric Corporation, P. O. Box 666, Pittsburgh 30, Pa.

Holist speeds loading and unloading

Westinghouse engineering was put to use when asked to design a cargo hoist unit that would be dependable under all conditions . . . be completely explosion-proof. The answer is disclosed here. This unit can lift 4,000 pounds of cargo at 24 feet per minute . . . weight capacity 10,000 pounds. The hoist is driven by a motor of enormous torque, a single planetary gear, a speed lever and a magnetic brake. Because of its long life, no spare need be carried by the plane, saving weight.



Lights penetrate heaviest fog

A major problem of the Airlift has been the high-ground fog. To overcome this difficulty, Westinghouse Aviation Research Lights are being installed at seven Berlin fields for precision-landing programs. These lights make visual landings possible under worst weather conditions. Flashing 40 times a minute, the lights can penetrate the heaviest fog for a distance of at least 2,000 feet. However, the pilots that don't mind the pilot because of approach distance so short. On clear or hazy days, or close to light foggy nights, the distance can be reduced.

Sure transformer operation

The "CSP" (Completely Self Protected) transformer—designed especially for the Berlin transformer under all conditions—permits safe instant starting, short circuits and overloads. Anti-Arcite 414 "CSP" transformers are being used for approach and other aircraft lighting.



Westinghouse
LEADER IN
AVIATION EQUIPMENT



X IS THEIR WORK SHOP

Exploring the unknown . . . in missiles, piloted research and guided missiles . . . is the important job of an able group of mathematicians, physicists, electronic, metallurgical and aeronautical engineers at The Glenn L. Martin Company. Revolutionary concepts of electronic guidance, instrumentation and navigation . . . definite servo-mechanisms . . . supersonic power plants and powerful new fuels . . . are their breath-taking tools.

RIGHT—Pursued by an angle of search beams, located by radio, guided by remote control, the Martin X-1000 is the first supersonic research aircraft to be built in the United States since World War II. It can make the longest flight ever achieved by piloted aircraft powered with ram-jet engines.

LEFT—Using rocket and ramjet power, another pursuit of Mercury flew in the stratosphere, and came on in on the nearly 200 miles into the atmosphere and beyond the upper limit of the atmosphere. The first flight was made in the aircraft at the altitude of 60,000 feet, and the second in the aircraft at the altitude of 70,000 feet. The second flight was made by a piloted aircraft powered with ram-jet engines.

Martin
AIRCRAFT

Builder of Dependable Aircraft Since 1910

AVIATION WEEK, April 26, 1949

SALES & SERVICE

Endurance Record Falls—Hard!

Pair in modified Aerones aim at 1000-hour goal after leaving previous 726-hour lightplane mark well behind.

With a new world endurance flight record already established, Bill Elhart and Dick Rindfuss only last week continued their remarkable grad shift to an Aerone 500, christened "Sweet Lady," in an effort to reach a new mark of 1000 hr. at Willow Run, Calif.

At 8:44 p.m. (PST) Apr. 14 they had passed the 726-hr. record previously set by Wey Carroll and Clyde Schlegel of Long Beach, on 1939.

► **Fastest 1000**—The Aerone is the name 1948. Builders in which they have already attempted three other endurance flights. Last December they were forced down on their third attempt after 58 hr. by severe cold weather.

A new C-145 Continental engine was installed for the successful attempt. Engine installation was modified by Dan Young, MacCullum Petroleum Corp. (as given), 10 percent of change in flight.

► **Oil Changes**—Mid-flight refueling. A drain line from the crank case to the tail of the airplane was fitted with a drain valve; a service garage assembled in front of the aircraft made possible to drain oil and then to have a line of tank to supply fresh oil replacing that drained was also fitted on the other side, a hand-operated air pump forced fresh oil through a low-loss reserve tank to engine after garage showed old oil had been nearly drained, regulations after service not replaced. At a fitting which passes the oil through line to a flow-rate valve attached to filter system as cylinder by fitting valve to filter system, then to filter, then through valve, service and back to cylinder. At another valve position of flow would be pass filter and return to crankcase. This was used only at intervals when it was necessary to service the filter, filter, clean and reassemble it.

The one-cylinder opposed, air-cooled engine develops 165 hp at 2700 rpm, but turns over at 2160 rpm, at the operating speed of 100 mph which was selected. Fuel consumption was reported less than 7 gal/hr. and of course, the engine is only 4 hp.

► **Flight Gear**—The aircraft was being inflated by passing air through a pump from a jeep traveling at 65 mph for the operation. A three-man crew crew included the driver, a man who took the empty cans, and another who handled the full fuel cans.

endurance flights was the cross-country nonstop flight to Manila, P.I., and return, following good weather forecasts to avoid repetition of the same incident which ended their first Doolittle flight. Apparently 3300 persons were sent out to the airport at the time the old record was exceeded, and the crowd remained with the aircraft to a point where the jeep moved over to a nearby field to complete the operation. At night, the flyers have been flying the plane to Thomas, a place which has extremely clear night weather, to avoid any bad night weather at the home field.

► **Broken Windows**—On one occasion in a night pickup the Buoy broke a window and remained through the night with a piece of cardboard stuffed in the opening. A replacement window was passed up and the mid-watch.

Refueling endurance flights extend at least as far back as 1927 when U.S. Air Service Capt. George L. Baile and Eddie Rickenbacker, the first American to receive the Distinguished Flying Cross, refueled at Rockwell Field, San Diego, Baile known as the "Dreadnaught" folder transport endurance record of 100 hr. 4 min. set in 1929 by Maj. Earl Spence and Capt. H. C. Eiler, both later USAF generals.



Wee Wing Preparing for Tests

A single-seat mid-jet flying wing type craft, the Wee Wing, is expected to be test flown in the near future. Designed and built by Robert M. Schenck of San Fernando, Calif., craft is constructed of graphite fiber and plywood and is 10 ft. long.

► **Wing Chords**—The wings are being inflated by passing air through a pump from a jeep traveling at 65 mph for the operation. A three-man crew crew included the driver, a man who took the empty cans, and another who handled the full fuel cans.

Wing roots in merenne span from 29 ft. to 31 ft. Pilot occupies a pod module similar to that of the North Hiller Attention Guidance cockpit.

► **Wing Chords**—Are 42 in. at center and 4 in. at tips. Wings at junction with main body are 9 in. in thickness. Primary truss arms are to be replaced for soft fighter and ramjet gear. Controls are required for stability.

► **Conversion**—Modified podels operate windup drag rudders and wheel operating elevation which also serve as a deion

A BIGGER AND BETTER
PROPELLER GOVERNOR
TEST MACHINE NOW
IN PRODUCTION AT
GREER



MORE POWER HIGHER PRESSURE
BIGGER DUTY WIDER RANGE are a
few of the major test features of the new
"GOVERNOMATIC" new line built by Greer.

The Greer Governor, long recognized by the aviation industry as the standard of automatic testing of hydraulic and electric propeller governors, has now been redesigned and improved to serve the higher demands of new governors. The drive power has been increased from 3 to 75 h.p. as the shafting circuit has been improved by replacing the 1/4 h.p. motor and 50 rpm pump previously used with a 2 h.p. motor and a 5 rpm pump.

Greer testing is completely automatic or manual whenever you prefer. Power, internal hydraulic and electric circuits are automatically arranged from a dozen to several models in two, three, four, or five, Wilcox units.

The Greer is tested under simulated flight conditions with the governor controlling the modulus and a hydraulic mechanism used to simulate natural forces effecting a propeller governor such as propeller torque, etc.

Test data has been set down in just under 10 minutes.

Further details will be sent upon request.

Other test machines for testing all air craft systems and components are also available. Write for your copy of our complete catalog.



BRIEFING FOR DEALERS & DISTRIBUTORS

PROPELLER GOVERNOR-Flight tests have been completed on a new type propeller governor developed by Robert H. Felt, president of Flight Industries, Inc., Springfield, Ohio, and designed as an accessory for standard Beechcraft controllable propeller models B-300 and R-300. Unit will be priced at less than \$700, weight 31 lb., including controls, and will fit in a shock mounting behind the instrument panel. The governor is reported selling at lower cost than anything previously offered for the same purpose.

By attaching it to this controllable Beech prop the combination acts as a constant speed propeller, with constant engine specs regardless of turbine load, power setting or attitude of aircraft, within 25 rpm plus or minus. By using the governor the engine naturally attains full takeoff rpm when the throttle is opened, since the propeller blades immediately go to correct pitch.

Fuel economy and decreased pilot fatigue are also cited as other advantages. Negative stability control is provided in event of possible failure of the servomechanism.

In a series of usage tests at Boyd Municipal Airport, Dayton airports four "all possible combinations" of artificially induced failures were tried. In all such tests the propeller either reverted to full allowable flat pitch, or, more at its operating pitch, but slowed to tendency to run away. CAA approval on the governor is expected in time to make first deliveries late in May.

AVIATION WEEK, MICHIGAN STYLE-Building pride of Beech Aviation's Bill Manu can be detected in the elaborate and detailed planning which is going on for the Sixth Annual Michigan Aviation Week, June 3 to 13.

Manu, who is being transferred from his Detroit post to advertising director for the corporation in Baltimore to head up Beech's home radio and television division, general chairman of the Michigan Aviation Week. He has set up a committee of 100 Michigan citizens, with Gov. G. Mennen Williams as honorary chairman, and expects to have some 50,000 persons participating in the event of the week.

Michigan Week has adopted a budget of \$100,000 budget for promotion of the affair. More than 60 Michigan airports are expected to hold special house June 11 and 12. Other events include a pilot regatta June 3 at Lansing, with \$1000 worth of prizes, model plane championships, flying梵文 field day, aircraft design contest among students of Michigan universities, technical forums, a Miss Michigan contest, coast air passenger and air cargo demonstrations and aviation editorial, photo and art contests among high school students.

It is probably the biggest state-wide aviation promotion in the country, and all phases of aviation should map healthily from it. But probably the biggest benefit is in getting the various aviation interests in the state to work together, even for a week. There are other states where aviation people could take a lesson from Michigan and Manu.

BACK TO FARM-Nevada in St. Albans, W. Va., recently decided by a decisive vote of 7386 to 3385 not to build an airport, thus settling some 10 years of argument in city council. Land had already been purchased for an airport, but was being rented for farm use pending the voters' verdict.

55 MINUTES-Bill Wagner, Barn public relations director, has a column of "con-cites" about the Novice, which he will tell to anybody who will listen.

Later it is about a pleased customer, name of "Bob" Fidler, an architect for the Metal Construction Co. in Spokane, Wash. He states Mr. Fidler has occasion to go frequently from St. Albans to Boise, an apparently small motor of his still doing.

Up in Idaho, where winter is severe, it takes him 32 hours on the road. But then, why is Mr. Fidler pleased? He has discovered that he can make the trip in 35 minutes, as a result of a new low-pressure bicycle pump manufactured on the West Coast, a unit saving of 31 hr. 3 min. regardless of road conditions.

-ALEXANDER McSUREY



WILCOX
FIRST CHOICE OF
BRANIFF *International* AIRWAYS

BRANIFF EQUIPS GROUND STATIONS
WITH WILCOX TYPE 364A TRANSMITTER

DESIGN SIMPLIFIES SERVICE

Conventional circuit design, fewer numbers and types of tubes, plus open meshwork construction simplify tube tracking problems. The transmitter is maintenance-free. The entire transmitter portion of the Type 364A is built on a die-cast aluminum chassis, mounted separately from the rest of the panel.

RELAY RACK MOUNTING SAVES SPACE

Compact design requires only 15 inches of rack space for installation, frequently utilizing space already available.

99% FREQUENCY STABILITY WITHOUT TEMPERATURE CONTROL

Through the use of a newly developed crystal, troublesome thermal expansion corrections and crystal warm-up are no longer necessary to provide inherent frequency stability.

SIMPLIFIED CONTROL FOR REMOTE LOCATION

Modulation over a single telephone pair and carrier control by means of a simple switch allow the transmitter to be readily located at a remote point.



WILCOX
ELECTRIC COMPANY
KANSAS CITY 1, MISSOURI



Wilcox
Type 364A Transmitter
115-125 Mc. Band

Write Today... for
Complete Information

Skycoach Builds Traffic and Strife

As load factors soar, Capital and NWA fight over competition and UAL wants TWA aircraft ended.

The traffic-generating stage of low-cost Skycoach experiments is becoming increasingly apparent.

Capital Airlines and Northwest Airlines have reported spectacular load factors as four new aircraft have started this spring. And officials of both carriers are now upgrading the sun-heavy service as a permanent part of air transport.

Bonnie Airlines and National Airlines are preparing to board the skycoach bandwagon shortly. Bonfire is quoted in authority to start 4-seat aircraft flight to and from Dallas Ft. Worth and Chicago on May 17. And the aging DC-4s NWA now has in its gate fleet, the "Nightbird" DC-4s, operate between New York and Atlanta by mid-May.

► **Capital Contractors** has issued a report to stockholders. Capital President J. H. Conroy and the company has shown a continuing net profit on aircraft services since they began May 4. That profit, he made clear, can be divided after the option absorbed its projected share of overhead expenses, all of which related directly to aircraft as well as to research, development and other capital and general operational costs.

Capital will continue to explore the possibility of offering two basic packages



AA WORKHORSES AWAIT NEW OWNERS

Replaced as passenger service by DC-6s and Convair Liners, retired American Airlines DC-3s and DC-4s are shown parked at the carrier's Tulsa, Okla., original base. Some are being modified for passengers, and others

are still awaiting leases. On May 31, when AA retired its last DC-3 from passenger service, it suspended the last of 25 Convair Liners on order. American's DC-6s were retained from passenger service in De-

cember, with some of them going into new passenger's stage operations. Convair's completely new passenger planes plus four new 96-seat embrailed Convair 580s will be for the 35 Convair Liners and \$30 million for 30 DC-6s.

Whatever the flights look, capacity 55 passenger loads they are typical of what cargo. Since most of NWA's cargo comes from east to west, while the heaviest eastbound passenger business has been from west to east, the two kinds of service are complementary.

Capital, which originated a New York-Minneapolis transoceanic operation on May 25, achieved a 61 percent load factor during the first 10 days of April.

On the West Coast-Chicago "Nightbird" coach run, started April 1, Capital's passenger load factor was 70 percent during the first 10 days of service. ► **Capital Parks Them** In-Or the Washington-Pittsburgh corridor there is a standstill. At 1 a.m. and 2 a.m. on the New York-Minneapolis coach flight, Capital's passenger load factors are 62 percent during the first 10 days of April. Capital's original "Nightbird" service from New York to Chicago showed a 78 percent passenger load factor from April 4 through April 10. But for the first 10 days of April, load factors on east coast runs hit 82 percent, 160 percent load factor and 78 percent a customer.

By contrast, Capital's overall passenger load factor during the first 10 days of April (heavily anguished by the more numerous night-fight flights) was only 51 percent. Company estimates back even passenger load factor on its 69-passenger DC-6s is another 10 percent.

► **Cold, Over-Capacitated**—Already Capital and AA have withdrawn their 36-seat aircraft from the market. Capital has joined the Civil Aeronautics Board to suspend Northwest's proposed conversion of 4 seats a mile. Northwest itself

has five aircraft, and savings anticipated by its company's DC-7 successor appear now between Kansas City and Los Angeles.

It was about twice that experimental conversion on the run with the same logic component of conventional lines. He added, however, that it was still too early to determine whether the result traffic is a new business or business taken from regular flights.

Between Washington, Pittsburgh, Cleveland, Milwaukee and the Twin Cities.

The new NWA coach operation was slated to begin late last week. Capital said the service, to be conducted with 36-passenger Marlin 200s, would be fundamentally different from the low cost DC-4 flights now offered by both NWA and Capital.

With a 180 percent load factor, Northwest has not broken even at 4 percent load factor with 36-passenger Marlin 200s, said G.M. President Conroy added that neither Capital nor NWA could operate competitive transoceanic services between Washington and the Twin Cities at a profit. He pointed out that success of six-month operations depend on competitive load levels.

► **UAL Battles TWA**—Meanwhile, United Air Lines has complained to CAB against extension of TWA's Kansas City-Los Angeles DC-7 transoceanic service to and from the Twin Cities. The New York-Kansas City 200-seat American Farwest liner has 31.5 percent TWA load and indicated it could not operate through east to west bound flight service unless a dramatic facelift would be required at Kansas City. But United believes TWA is aiming at a transpacific New York-Los Angeles coach service for \$109.50 compared with the regular \$17.50 fare.

Besides serving TWA's new coach operation, United wants CAB to sustain TWA's present low-fare Kansas City-Los Angeles service. At the recent annual meeting of the CAB, UAL President W. A. Patterson disclosed to *Airline Week* that he felt coach service should be justified under present costs.

A few days earlier, TWA President Ralph Dawson and savings anticipated by its company's DC-7 successor appear now between Kansas City and Los Angeles were about twice that experimental conversion on the run with the same logic component of conventional lines. He added, however, that it was still too early to determine whether the result traffic is a new business or business taken from regular flights.

New Building

A \$350,000 temperature administration building to provide passenger facilities to the new Ottawa International Airport is to be completed in time for the opening of the airport for the 1949 summer season.

The temperature facilities will be provided through conversion of the shell of the future airport terminal as the site of the former federal administration building and will be ready by Aug. 15. It will be used for office and public facilities. Plans have been approved by Ontario City and Ontario in the Department of Transport at Ottawa.

Earnings Reflect Traffic Gains

Carrier statements show operating deficits are down and revenue passenger mileage is above last year's levels.

Carrying passenger month by month, airline traffic during the first quarter of 1949 peaked in above last year's levels. And earnings statements show it.

Revenue passenger mileage, flown by the 16 domestic transoceanic during February, showed more than 20 percent above totals for the same 1948 month. In March, the increase has been a 24.311,000 increase for February, 1948 (Aviation Week, April 11). February of last year was a mean January 55,78,000 before recent retroactive load increases. The current operating deficit for the year February is not expected to exceed \$3,500,000.

American Airlines, which lost about \$21,000 in March 1948, operates at or close to the break-even point as the same month this year. Instead of the \$4,500,000 deficit shown at the end of the first quarter of 1948, AA's loss in the same period this year should be on par with 1948.

► **UAL Reports**—United isn't doing as well financially as last \$2,571,000 on operating expenses in the first two months of 1949, compared with \$2,622,000 in the same period last year. But UAL's earnings per net loss for first quarter 1949 will be less than for 1948, according to United's President W. A. Patterson.

TWA also lost considerably more on domestic services in January-February, 1949, than the \$750,000 dropped in the same two months of 1948. Yet here again the earnings per net loss for the first quarter is expected to be under 1948 levels.

► **Oversized Traffic**—Aided by special demand from passengers traveling on TWA's Labrador and Greenland routes, TWA's January-February 1949 net profit was 1949's 50 per cent share. 1948, however, was down sharply. The first grand omnibus held true for American, Delta, and Pan American's Atlantic division.

Two small domestic carriers—Delta and National—will be in the black so far in 1949, but have been losing early in 1948. Delta earned \$18,000 in January-February, 1949, while it lost \$417,000 in the first two months of the year just past. National made about \$493,000 in January-February, 1949, however, a \$448,000 operating loss in the same period in 1948.

► **Fights for Eastern**—Eastern Air Lines' profits during first quarter 1949 are expected to be ahead of the last first three months of 1948, when the company netted \$11.8 million. After a fairly slow January, EAL's passenger

traffic peaked up sharply in February and March.

Western Air Lines reports that passenger figures for March show a decline of 10 percent over that month for the first time in five years. WAL's first quarter operating losses will be under the \$60,000 figure reported for the same period last year.

Capital Airlines' operating losses during the first two quarters of 1948 were slightly under the \$42,000 deficit which was reported for the same period during 1947.

March showed further improvement, and a profit is expected in April. Revenue passenger mileage reported by Cap in the first two months of this year was up more than 33 percent over January-February, 1947.

▷ **Debt Wiped Out**—In its recently-issued annual report for 1947, Capital disclosed an \$853,118 operating profit and a \$12,097 net profit. Prior to large restructure and reorganization, the carrier had shown a heavy loss in the report for this year.

The net payments also improved capital losses for 1947. Originally, the net deficit was set at \$2,687,000. But restructure and payments reduced this to \$1,561,000.

President J. C. Coughlin said that 11 months ago Capital's creditors hung in the balance. "Today," he said, "it is a vigorous, growing concern."

Coughlin estimated that Capital's passenger traffic for 1948 would approximate that of 1946 but that some signs point to growth. He disclosed the company could handle substantially more traffic without expanding present facilities.

▷ **Capital Gets New Equipment**—Key to Capital's program involving re-placement of Capital's DC-6s and DC-3s is an arrangement with the successful conclusion of a re-financing plan, the statement reported. Several new types of equipment are being studied by the company.

Realizing that its present DC-3s must be kept in service for some time to come, Capital is modifying them to carry 20 instead of 21 passengers and at a minimum fuel weight, carrying 10,000 lbs. of fuel and carrying 10 passengers. This week, capital has about 18000 per plane, to be done in the carrier's own shops. Modification of the entire DC-3 fleet is to be completed by mid-summer.

▷ **Improvement for NWA**—Northwest Airlines, while still deeply in the red, is also showing some improvement. During January and February, the company's domestic traffic was down slightly from last year's levels, but operating losses were reduced.

NWA's recently-issued annual report for 1948 showed net loss of \$107,474, compared with a deficit of \$146,140

Where Air Mail Money Went

Big Five	Revenue	Ton Miles	Mileage Rate	Revenue	Ton Miles
Carries			Carries		
United	\$1,456,139	8,195,387	Joint 61	\$161,417	386,188
TWA	1,371,011	8,071,708	Continental	11,130,877	27,945
American	4,908,929	8,075,657	Trans-Tex	1,100,000	28,000
Eastern	2,110,901	4,076,772	Midwest	995,395	26,444
Northwest	2,862,408	2,977,932	All America	967,791	41,185
			Mid-Continent	902,621	288,000
Carries	517,217	484,116	West Coast	857,170	11,263
Capital			Panama	864,979	18,759
Delta	1,748,025	9,217,781	Puerto Rico	817,000	21,000
Airline	2,107,425	7,700,000	Chicago	757,476	19,800
Northwest	2,115,309	7,697	Florida	792,197	7,487
Southwest	1,997,815	45,882	Midland	648,258	105,089
Colts &			W. Central	498,394	11,521
South	1,802,415	45,731	Los Ang. Air	775,538	38,486
Panair	1,141,718	75,589	Caribbean	562,901	6,983
Western	1,580,130	40,547	Salvador	965,995	3,813
Colombia	7,362,714	31,636	Hawaii	26,311	46,319

Fig. 2. Big Five domestic airlines

handled over 100,000 tons of mail

and air mail to and from the government in 1948 as the 25 other certificated domestic carriers did the job for about \$151 million dollars less than what it cost with the smaller operators.

The survey shows that one flight

alone to Carries totals \$394,497.

Fig. 3. The Big Five Air Mail Tax

revenue totals \$394,497.

Fig. 4. The Big Five Air Mail Tax

revenue totals \$394,497.

Fig. 5. The Big Five Air Mail Tax

revenue totals \$394,497.

Fig. 6. The Big Five Air Mail Tax

revenue totals \$394,497.

Fig. 7. The Big Five Air Mail Tax

revenue totals \$394,497.

Fig. 8. The Big Five Air Mail Tax

revenue totals \$394,497.

Fig. 9. The Big Five Air Mail Tax

revenue totals \$394,497.

Fig. 10. The Big Five Air Mail Tax

revenue totals \$394,497.

Fig. 11. The Big Five Air Mail Tax

revenue totals \$394,497.

Fig. 12. The Big Five Air Mail Tax

revenue totals \$394,497.

Fig. 13. The Big Five Air Mail Tax

revenue totals \$394,497.

Fig. 14. The Big Five Air Mail Tax

revenue totals \$394,497.

Fig. 15. The Big Five Air Mail Tax

revenue totals \$394,497.

Alaska Airlines Shows Profit For 1948

Showing substantial earnings on its worldwide scheduled and contract services, Alaska Airlines was well in the black for fiscal 1948—the carrier's first year under President James A. Warden.

In spite of higher costs, reduced fares, and losses on its certificated routes within Alaska, the Anchorage-based company's profit for the year ended Dec. 31 was \$152,448, compared to an estimated net loss of \$611,219 for fiscal year 1947. Gross operating revenue was up 67 percent. Profit continued through the first quarter of fiscal 1949.

▷ **Oversea Flights**—Alaska Airlines has a contract with the Navy for airlift from Anchorage to Point Barrow on the Arctic Circle. In other major movements, a few long-haul flights around the world trips, air freight carrying military dependents from Seattle to Tokyo, 11 long-haul air routes from Germany to New York, 87 trips for the armed forces from the eastern seaboard to Europe in support of the Berlin airlift, a six-week operation from Mexico City to Lethbridge and Madrid by a Memphis Big Line, and a two-month operation between London and Johannesburg for a South African line.

AA also conducted a scheduled operation between the U. S. and Alaska under special CAB exemption during the Winter. Contract was from June 15 to September 15 to December 15. Between the carrier has been transporting 5,600 displaced persons from Aden, Aden, and Sharjah to Haifa, Palestine. A few months ago company began a weekly round-trip between San Francisco and Tokyo for the military.

Eighteen aircraft were added to Alaska Airlines fleet in the past year, to a total of 40. The new Bell Jetfoptrons, and seven single-engine planes for both bush and coastal routes. Government Wedgetail and Northwest Northwest currently has pending before CAB applications for routes from Anchorage, Alaska, to Coast Field, More, the Twin Cities and Chicago, and from Anchorage and Kodak to Seattle, Portland, San Francisco and Los Angeles.

KLM Service

KLM is now conducting an airplane service Amsterdam-Notre Dame with flights to Klaipeda and the British Isles of Margaret. Need areas where the Indian and Pakistani governments closely related in the fact that has KLM aircraft because of Dutch pilot action.



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Cities and Chicago, and from Anch-

orage and Kodak to Seattle, Portland,

San Francisco and Los Angeles.

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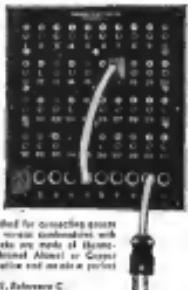
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Survey Merger

(McGraw-Hill World News)

MONTRÉAL—Canadian Pacific Airlines has acquired all of the assets and services between the Quebec-based Survey Corp., Canadian arm of the British-controlled Hunting Aviation Group, and will withdraw from the survey field.

A subsidiary of PSC, Photogrammetric Services (Quebec) Ltd., will carry on the existing CPA contracts as well as its own private company's business in Quebec. The new subsidiary, in addition to acquiring CPA's survey assets and laboratory equipment, will assume CPA's Montreal office and control the survey personnel of PSC's Lachine-based parent predecessor of CPA's survey division, among those managing the staff of the new subsidiary. P. F. Gile, present manager of PSC's Montreal office, will become manager of the new subsidiary.

PSC has moved into its newly-constructed ultramodern Toronto plant at 1430 O'Connor Drive.

New Job for 314s

The veteran 12-passenger Boeing 314s, built originally by Pan American Airways and BOAC, have taken on a new job.

Three of the 314-passenger craft, operated by American, are to start flying migrants from Europe to Australia in May. British Caledonian has registered Interairways Ltd. Transport Pty Ltd. in Sydney to bring 200 migrants monthly into that city from Juan Tagle, Chile. Pan American's head is Fred Polson.

World Airways, Inc., New York, announced plans to sell its fleet of seven Boeing 314s after this first year (Aviation Week, Feb. 14). The company cornered the flying boats on the New York-Baltimore-Puerto Rico run in 1948.

Competition in Calif.

Uncertified private airlines are making the hardy-travelled Los Angeles to San Francisco route the ultimate in hangar-to-hangar transportation, in the deep concern of carriers holding CAB franchises to fly the link. Even the bus companies are worried.

California Central Airlines, which began operating the run with 18-passenger DC-3s early in January, apparently is going to expand and replace its fleet of 10 DC-3s.

Midwest, one of 10 stand service companies, will be off all their plane routes. United, which has been flying to San Francisco, has suspended service because of safety, and the judge indicated the pay is bad that Northwest had committed a breach of contract.

In Minneapolis, a case was a \$15,000 suit against Mid Continent Airlines for injuries suffered while he was a passenger on a plane that experienced turbulence. The complaint and the suit held warning light on the MCA.

trip and Western Air Lines charged it \$12,520. The California Public Utilities Commission recently held hearings to determine whether California Central's fare is "just and reasonable," and a probe of Robin's operation is also planned. CPA, which is conducting down-the-roadbedded surveys, presumably cannot touch the scheduled airstrata services of Robin and California Central unless interstate traffic is handled.

Reporting a 50 percent load factor at January 1, 1967, 76 percent in February, California Central says it made a profit during the first six months of operations. Load factor during the first half of March rose to 75 percent.

► **Equipment.** Eastern California Central leased its equipment from Arctic Transport, Canada, Barabank, a 309-passengerized transoceanic operator. Officers of California Central, which has less than a dozen full-time employees, are the same as those at ATC. California Central carried over 2000 passengers in January, 3348 in February and over 2100 in the first half of March.

Robert Archibald, based at Barabank, also has flown with ATC since the early 1950s. In this year's look, the DC-11s have disappeared. Air America had 16 ATC California Eastern Airlines and the Flying Tiger Line. Air America expanded in 4 routes a mile apart to end flight last Dec. 31 but plans to resume service this spring.

Airlines and Courts

U.S. courts are imposing high penalties on airlines whose passengers sustain injuries, either physical or mental.

In Tampa, Fla., a Federal pay rate complaint against National Airlines to pay \$1000 to a woman who suffered a fracture of a finger in a cockpit on board an F4U Corsair. The complaint and a deputy sheriff are set to face juries from the transport after he agreed to cancel his reservation only four hours earlier before plane departed from.

► **Branch of Contract-NAL.** and the suit was on which another passenger had a standing reservation but that at this time it was not cleared until after the plane had been given to the can passenger, who was offered but turned down, a seat on a later flight. The damages were set at \$1000. The \$1000,000, multimodal liability of the defendant, requires because of safety, and the judge indicated the pay is bad that Northwest had committed a breach of contract.

In Minneapolis, a case was a \$15,000 suit against Mid Continent Airlines for injuries suffered while he was a passenger on a plane that experienced turbulence. The complaint and the suit held warning light on the MCA.

DC-3 bound from Minneapolis to Omaha should have been turned on by the pilot before the turbulence was experienced.

The plane ran into a squall. Passengers who did not have their seat belt fastened were thrown to the ceiling when the craft dropped suddenly. The complainant allegedly suffered a neck dislocation. MCA reportedly countered that the passenger assumed the risk for impact sustained under such circumstances.

Piedmont Ruling

Ruling that CAB has no power to award routes to a carrier that did not apply for them, the U.S. Court of Appeals for the District of Columbia has reversed a Board order granting a route letter certificate to Piedmont Airlines, Inc., Winston-Salem, N.C.

CAB, in a 1965 order, had awarded Piedmont short-haul routes in Ohio, Kentucky, West Virginia, Virginia, and North Carolina. State Airlines, Inc., of Lenoir, N.C., an unaccredited applicant, protested the Board's decision, charging that Piedmont had not sought the routes received and that CAB overruled its authority.

The court said that of 39 Piedmont failed to show, only nine were the routes awarded to Piedmont by CAB. The route finally granted Piedmont could not even be considered a "substantial" one. The carrier's protest was upheld by "abuse of discretion and clearly unreasonable judgment and arbitrary interpretation of the word 'substantial' of the court declared."

A map prepared by the court showed that the routes awarded Piedmont closely paralleled the routes applied for by State Airlines. In reversing the case, the court remanded it to CAB for further proceedings. Piedmont has been operating its controversial routes since February 1964.

Ask Route Extensions

Brussels Airlines is bidding for major extensions of its domestic and international services. The carrier, which is now affiliated to Air France from Paris to Paris and London, has asked CAB for route extensions to Paris, Rome, and Moscow, and for route extensions to Paris, Rome, and Moscow.

► **Special Airlines.** American Company for Special Airlines & Special Operations, Inc., a division of American, has asked CAB for route extensions to Paris, Rome, and Moscow, with routes to existing power plants.

► **PEAC.** PEAC, a private company with major shareholders and leaders, both in France and the U.S., has asked CAB for route extensions to Paris, Rome, and Moscow, with routes to existing power plants.

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EDITORIAL

Cream Skimming and Progress

For months the Air Transport Assn., peering and shielded, has waited bitterly that the unscheduled airlines have been "skimming the cream" of the air traffic.

Now, not one needful that we know has charged as much fare in the scheduled carriers. So if the ATA then admits that it knows the low-priced carrier is the "cream" of the air travel market, would someone please come forward and explain why the scheduled carriers let someone else capture this cream first? They have been operating under the present law since 1938, and have wide freedom in setting their own passenger rates.

If, however, ATA means that the "cream" is the long-haul traffic, then once again, would someone please tell us why—if they recognize the value of the long-haul carriage traffic—they have not met the full demand for such service? Why has an entire new industry been able to serve over thousands of transcontinental passengers in an incredibly short time, with so little profitability? Especially when these crowded services are slow, less comfortable, without seats. Is this the cours of the traffic? The scheduled transcontinental carriers have had the wherewithal to lap up this cream but obviously have failed to do it. Why? Everything we on their side, line, experience, know-how, flying equipment, airline-size ships, rules preserved—perhaps everything but top management savvy.

Top management of the established industry has been indecisive, indecisive, indecisive, underestimating the ascendancy of America. Until recently, it has been more interested in keeping the industry uproot open than in building an transportation on sound economic lines. Top management of some of the scheduled, anyway but agile, have not made these mistakes. They have kept in from the other side of the tracks and lapped up this cream the fat with blinding speed. The fight is on. The interlopers will probably be forced out, except for a few. Certainly, a few should be permitted to remain.

For the scheduled carriers, weakened by the fight, are finally making vigorous action in reducing fares, improving service, and making it difficult for CAB to perpetuate the standards. And Washington talks of separating the industry carriers from the service compensation carriers. This is good for the industry. It will encourage more efficiency.

As AVIATION WEEK has forecast for so many months, the Congress and the public are trying of every way possible, even raising fares, service too often designed to meet the carriers' rather than the public's needs, while

low-cost operators who would offer a yardstick of competition are ground under the bureaucratic heel.

The Senate's investigation into the airline brings the judgment day much closer. So does CAB's new, stiffer policies, brought in several hours ago. But don't let that premonition handicap low-fare airports. The road is unprofitably toward a rougher CAB, and rightly so.

Does all of this criticism of ours appear anti-industry? Could be, if you are looking down your nose through those sharp-toothed bifocals.

But AVIATION WEEK feels this way. Air transportation could become the most convenient transportation in all history. Our strength easily lead the world. Who else but America can achieve that dozen of ultimate safety? Our latent air transportation potential is unbelievable. But only mass public usage will bring the maximum of peaceful, commercial achievement, and permit us to keep it.

Only public, competitive battles will raise the full value of air transportation. Government regulation and control will grow in proportion to safety. The trend, then, must always be away from safety, never toward ease of use. We have the government-controlled airlines of Great Britain at the horrific example of government ownership.

Perhaps we shall never eliminate subsidy. But let us not way ourselves in camouflage and depend on the subs that others get, or have gotten, more abundantly than the others.

It is true that they have. But look at them. Do we envy the subsidies today? If the railroads had had the gumption to modernize their rolling stock and their right-of-way, to speed up their service over the road, improve their schedule frequency, do you think buses and trucks would have grown at the phenomenal rate they have? We doubt it. Too many John Q. Publics got fed up with cinder showers, slow freight, infrequent trains, and a general complacent attitude of "the public be damned."

Why should airlines make the same stupid errors of its predecessors? Why can't commercial air transportation struggle like a dozen to thirty now? The critics of subsidy and stand on its ovo foot and sing it out with its competition in the old American spirit of private enterprise, competition, and better public service?

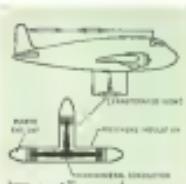
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